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ABSTRACT

Focusing on how secondary school reading programs can be organized and on how their effectiveness can be measured, this book synthesizes reading research in several significant areas and makes concrete suggestions for using this research to improve reading instruction. Each chapter, opens with a question posed by a teacher, discusses research with reference to this question, and concludes with a summary and a list of references. Generally, chapters present various, well-documented processes and products (individually or in limited combinations) that contribute to effective reading instruction in secondary schools. The practitioners' contribution to the advancement of knowledge in the field is recognized, thereby enhancing the reciprocity between researchers and practitioners. Each chapter concludes with a summary and a list of references. Titles and authors of chapters included are (1) "Reading Programs" (D. W. Moore and A. G. Murphy); (2) "Effective Schools/Effective Teaching Research" (M. W. Conley and A. G. Murphy); (3) "Developing Lifetime Readers" (D. E. Alvermann); (4) "Learning from Text" (D. E. Alvermann); (5) "Comprehension/Thinking Skills" (D. E. Alvermann); (6) "Vocabulary" (D. W. Moore); (7) "Readability" (D. Holdzkom); (8) "Selection of Materials" (D. W. Moore and A. G. Murphy); (9) "Integrating Oral and Written Language" (D. E. Alvermann); (10) "Grouping" (M. W. Conley); (11) "Teacher Decisionmaking" (M. W. Conley); (12) "Metacognition" (D. E. Alvermann); and (13) "Staff Development" (P. B. Lutz). (JD)

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# Research Within Reach Secondary School Reading

## A Research Guided Response to Concerns of Reading Educators

Donna E. Alvermann
David W. Moore
Mark W. Conley
Editors

International Reading Association, Inc.
Newark, Delaware 19714-8139, USA
1987

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# Foreword

*Research Within Reach: Secondary School Reading*, is a tantalizing title when one considers who is reaching and who is being reached. Explicitly, products of research are offered to classroom practitioners for application through their instruction. Implicitly, products of practice are offered to researchers for confirmation through their studies. Thus, the reaching is reciprocal with both practitioners and researchers having equal standing. When read from such a perspective, this volume is especially enlightening.

The organization of this book reflects one of the major issues it confronts: how secondary school reading programs can be organized and how their effectiveness can be measured. In the main, the chapters present various processes and products which contribute to effective reading instruction in secondary schools. They present studies which focus on these processes and products individually or in limited combinations. As noted in the first and last chapters, research is limited on the effectiveness of combining these processes and products to establish all-school reading programs. Research methodologies used to validate the separate processes and products cannot be used to validate all-school programs in which these processes and products are combined in a variety of settings. The variables are too complex and uncontrollable. However, studies conducted in the qualitative research tradition *can* be used to validate all-school reading programs. I find in this volume an implicit call for such studies. Acceptance of qualitative studies will move us beyond a "Yes, but..." response to well documented reports of successful programs.

*Research Within Reach: Secondary School Reading* is a fine addition to the literature on reading research and instruction in secondary schools. However, I disagree with the assertion that "Reading researchers only recently have become interested in what goes on in classrooms." It is difficult to reconcile this statement with what researchers such as Ruth Strang, David Russell, Guy Bond, Donald Durrell, Helen Robinson, William S. Gray, and Sterl Artley accomplished over several decades. I suppose it depends on how one defines *recent*.

Between the opening chapter on "Reading Programs" and the closing chapter on "Staff Development," the authors present well documented suggestions for ways to enhance reading instruction in secondary schools. They present a judicious blending of old and new. They acknowledge the value of some of the early practices that were based more on intuition than on research and also acknowledge that some of the more recent research affirms those early practices. In so doing, the authors give standing to practitioners and their contributions to the advancement of knowledge in the field. On the other hand, they (like Bruner) urge us not to take for granted as true what we have accepted out of habit and to open our minds and classrooms to new ways to attain our instructional objectives in reading. To that end, they synthesize the research in several significant areas and make concrete suggestions as to how that research can impact on practice. The authors provide a good rationale for the practices they recommend as well as for some practices already in use. In this manner they enhance the reciprocity between researchers and practitioners as both grasp for the research within reach.

Harold L. Herber
Syracuse University

# Introduction

For hundreds of years, the ability to read has been regarded as the definitive mark of the educated person. More than any other intellectual skill, reading has been identified with educational prowess. We know, for example, that Chaucer's Clerk of Oxenford was an educated man because, not only could he read, he actually owned the books!

One of the primary goals of education in our country is to teach people to read. Reading was viewed as being of such importance to the maintenance of the Republic that the Constitution expressly protects the right of Americans to read virtually anything. Today the success of a school is often judged by students' scores on tests of reading performance. While our world seems infinitely more complex than Chaucer's or Jefferson's, we still equate education with reading.

Students at basic, intermediate, and advanced levels of reading performance can be found in most secondary schools (Goodlad, 1984). Educators who wish to promote literacy at all levels of development require informed perspectives on this topic.

In order to help secondary school administrators and teachers improve reading instruction, we must heighten awareness of the need for change and provide some research based answers to questions teachers ask about the teaching of reading. That is what this book is intended to do.

## How This Book Was Written

The Research and Development Interpretation Service (RDIS) of the Appalachia Educational Laboratory (AEL) was established to develop ways to translate research into practical terms for teachers. Sponsored by the National Institute of Education (now the Office of Educational Research and Improvement) of the U.S. Department of Education, RDIS has conducted a number of activities that help teachers put research into practice. One of the most successful of these activities has been the creation and publication of the Research Within Reach series of bulletins and monographs. This series presents research based answers to practical questions. It is important to realize that the books in this series are not meant to function as detailed teachers' manuals, as general methods texts, or as reports of individual studies; they are meant to synthesize the available research that applies to particular questions.

Since 1978, this series has presented individual volumes that synthesize and translate research in elementary school reading, elementary school mathematics, oral and written communication, secondary school mathematics, science, and, now, secondary school reading. While the development of each of these volumes has been marked by individual differences, the same general method has been used.

First, RDIS begins by identifying the questions teachers want answered. One of the reasons teachers cite for not attending to research is that they perceive it as only marginally relevant to their real needs and concerns. Therefore, each of the Research Within Reach projects is begun by asking teachers to identify questions they have about a particular curricular area. In this project, the president of each state's International Reading Association affiliate was contacted for help in collecting questions. Help also was enlisted from the staff at each of the Regional Exchange projects, operated primarily by the regional educational laboratories. These Exchanges are funded as dissemination projects, charged with helping school people use research based knowledge. As in the past, RDIS received substantial support from the Exchanges. Some Exchanges sponsored workshops on various aspects of reading research and practice and used these as an occasion for collecting questions. Others sent questionnaires to teachers. More than 300 questions were collected.

After the questions are collected, a consultant panel is established. The panel studies the questions and selects those to be investigated in an attempt to identify questions of widest interest.

The next step of the process is to select editors and chapter writers to synthesize and report research based answers to the questions. Using Bloom's definition of synthesis – the discovery of a pattern that was not clearly there – extensive original syntheses are conducted. For this project, research was limited to studies that contained secondary school students as subjects or that addressed secondary school concerns.

A first draft is prepared and the consultant panel convenes to discuss it. Members of the panel point out weaknesses and areas for elaboration and provide added insights about ways to strengthen it. While the panel is reviewing the draft, teachers are given a chance to comment on the manuscript. All of these suggestions are returned to the editors and writers, who polish the drafts.

The last step is to publish and disseminate the report. This manuscript followed the International Reading Association's regular review process for monographs. Reviewers' comments were taken into account by the IRA Publications Committee and the Director of Publications when deciding to accept, reject, or suggest modifications in this report.

## Overview of Contents

Because learning from text is diffused throughout the secondary school, this volume has been written for all secondary school teachers, not just those who specialize in reading. Teachers who have no particular background in reading might find new ideas in this book. The book might have a familiar echo for some teachers, either because many of their intuitions about teaching are confirmed by research, or because research has examined problems teachers often encounter. Reading specialists might find that our synthesis of the research helps them attain new insights about their work. Rather than isolating the problems of teaching reading in either remedial or enrichment situations and then writing chapters focused on those extremes, we elected to describe the research and then apply it in examples drawn from many different contexts.

The chapters are patterned after a model. Each chapter opens with a question posed by a teacher; some chapters present more than one question. A discussion of the research based answers to the questions follows. The discussions include many examples and implications.

Each chapter concludes with a summary and a list of references. Each chapter is written so it can be read in isolation. Although this practice may have created some repetition, it has been deemed valuable because it allows readers to select chapters of particular interest.

The book is divided into five parts organized around a model of knowledge use: Knowing Why, Knowing What, Knowing How, Knowing When, and Knowing Who (Paris, Lipson, & Wixson, 1982). The parts represent types of knowledge known to affect teaching and learning at the secondary school level. Each part is further divided into chapters. Chapters in the first part, Knowing Why, provide a rationale for the goals of secondary reading programs, for applying what research has to say about effective schools and effective teaching, and for instilling in students a desire to read.

Part Two, Knowing What, is concerned with the knowledge base that undergirds all teaching at the secondary school level but more specifically with helping students read to learn. That knowledge base consists of research implications for helping students learn from text. Two of the chapters focus on the comprehension and vocabulary skills necessary for that learning to occur. Part Two also describes what effect the ranges in student reading ability and text difficulty have on learning from print.

Part Three focuses on Knowing How, the procedural aspect of knowledge use. One chapter spells out what research and theory have to say about selecting materials; another deals with oral and written language instruction; and the final chapter addresses grouping procedures in the secondary school classroom.

Part Four, Knowing When, contains important information. Unless teachers and students know when to apply what they know about reading, they will not make full use of their knowledge. Chapters in this section include one on teacher decisionmaking and one on student use of metacognitive strategies.

The final part, Knowing Who, contains a single chapter on staff development. If the information contained within the other chapters is to reach its intended audience, teachers must be energized to respond to the reading needs of their students.

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The International Reading Association attempts, through its publications, to provide a forum for a wide spectrum of opinions on reading. The policy permits divergent viewpoints without assuming the endorsement of the Association.

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We are grateful for the expert advice from our consultant panel. Mary Dupuis, Michael Graves, and Harry Singer each made a valuable and unique contribution to our effort.

The questions addressed in this book were drawn from a pool of more than 300 questions generated by educators and researchers. The state presidents of the International Reading Association affiliates assisted in collecting and generating questions. We thank these individuals for the questions which are the heart of the book.

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# PART ONE
# Knowing Why

## 1

David W. Moore
Ann G. Murphy

# Reading Programs

## What are appropriate goals for a secondary school reading program?

This chapter presents groundwork for the succeeding chapters. It examines the goals of secondary school reading programs, presents a theoretical perspective on goals, and describes four mission statements. The second section of the chapter investigates the viability of a common approach to secondary school reading instruction, the reading laboratory approach.

### *The Nature of Goals*

Clearly stated goals are crucial to educational effectiveness. Goals allow educators to ensure curricular continuity across grade levels; they serve to identify priority areas and help assure allocation of educational resources to those priority areas; they assist instructional planning by clarifying purposes of learning; they facilitate identification and strengthening of weak curricular areas; they assist communication with students and parents by serving as a framework for reports of student progress; and they make possible assessment of how well school districts accomplish their priorities.

There are several levels of goals. The broadest level, which may be called a *mission statement*, describes a general purpose, intent, or direction and is not concerned with defining a particular achievement within a specified time period. The second level, referred to as *instructional goals, program level performance objec-*

*tives*, or *curriculum objectives*, relates to district or schoolwide priorities (Krathwohl, 1965). These goals may indicate a desired exit level of performance (mastery), but they stop short of specifying instructional practices. The third (and most specific) level of goals is written for specific courses, disciplines, units, and curricular areas and may be called *instructional level performance objectives, student learning objectives, student performance objectives, subject area competencies*, or just plain *objectives*. In this chapter, we focus on the broadest level of goals, mission statements.

Educators need to take care that they do not establish either too few or too many goals. In his analysis of secondary education, Boyer found both extremes. Too many high schools "seem unable to find common purposes or established educational priorities that are widely shared" (Boyer, 1983, p. 63). At the other extreme, he found that some so-called goals trivialized education, being so numerous as to be unrealistic. In *Horace's Compromise*, Sizer (1984, p. 78) identified a related problem:

> The rhetoric of high school purpose has been uniform and consistent for decades. Americans agree on the goals for their high schools. That agreement is convenient, but it masks the fact that virtually all the words in (these) goal statements beg definition.

Finally, Goodlad (1983) reported that meaningful and comprehensive lists of goals were hard to find. Instead, the school visitation teams that he headed found long lists of goals or objectives, although there was "little evidence of goals consciously shared by the teachers" (p. 50).

In brief, goals for secondary reading programs are important because they provide direction. Goals provide a basis for making decisions about which students to serve, what materials to purchase, and what teaching techniques and staffing patterns to use. Educators with a clear sense of direction certainly are to be preferred over those who make decisions based on random thoughts. Indeed, it is hard to imagine any convincing support for purposeless, haphazard secondary reading programs. The difficulty comes in distinguishing appropriate from inappropriate goals.

The next portion of this chapter presents a theoretical perspective on secondary reading programs that provides background for specifying appropriate goals.

*Belief Systems*

Walmsley (1981) argued that goals for secondary reading programs are derived from particular belief systems. We suggest that belief systems only partially drive a program; practical constraints such as funding and available personnel also determine the nature of a program. Nevertheless, knowing alternative belief systems provides a context for understanding and evaluating alternative goals that help shape reading programs. Walmsley presented four belief systems: cultural reproduction, academic; cultural reproduction, utilitarian; romantic; and cognitive developmental.

*Cultural Reproduction: Academic.* The cultural reproduction belief system that stresses academics is derived from classical depictions of the educated person. This ideology seeks to educate individuals grounded in great literature who can analyze, synthesize, and evaluate literary concepts. Knowing the concepts traditionally presented during literature study (e.g., Macbeth was ruined by his lust for power) is considered as important as applying literary analysis skills (e.g., interpreting symbolism). Although Walmsley limited his discussion of the academic belief system to English literary concerns, we would extend that ideology to other content areas. There are concepts traditionally found in social studies (the assassination of Archduke Francis Ferdinand touched off World War I), science (a covalent bond is formed by shared electrons), mathematics (a ray is any of a group of lines diverging from a common center), and other content areas. These subjects contain time honored knowledge as much as does the subject of English.

Students who excel in traditional content area classes designed for college bound students exemplify the outcomes supported by the academic belief system. Secondary reading programs that are based on materials from these content areas and that emphasize reading skills assumed to be prerequisite for understanding these particular materials follow the academic tradition. For instance, reading programs that include the study of imagery and symbolism in literature – albeit with materials written at relatively low levels – follow the academic tradition.

*Cultural Reproduction: Utilitarian.* Rather than seeking to help students cope effectively with their academic heritage, the utilitarian tradition emphasizes more pedestrian, functional concerns. This belief system seeks to produce individuals who can effectively handle the reading demands found in work, home, and society. The ability to survive and succeed in a complex, technologically advanced world depends in part on reading, so the requisite skills are emphasized. Advanced utilitarian skills such as comprehending legal documents and occupational brochures are presented along with rudimentary skills such as reading street signs and labels on medicine bottles.

Students who excel in career education, vocational agriculture, auto mechanics, and consumer mathematics exemplify the outcomes supported by this ideology. Reading programs that emphasize materials and reading skills applicable to these courses follow the utilitarian tradition – for example, reading programs that include the study of graphic aids associated with car repair manuals.

*Romantic.* The romantic belief system emphasizes the use of reading to promote self-awareness. Attitude toward reading is emphasized, insights into human nature are sought, values are clarified, sensitivities to life are sharpened, and understandings of oneself are deepened. Teaching techniques that follow the romantic tradition reflect a psychoanalytic approach. Open-ended questions are asked (What do you think is the most important part of this story?), probing questions are interspersed (Why do you think so?), and attempts to connect readers' experiences with the passage predominate (Have you ever acted like the main character?). Proponents of romanticism might use the same reading materials as proponents of the academic tradition, but students would be guided to fundamentally different responses.

*Cognitive Developmental.* Unlike the three belief systems already described, the cognitive developmental tradition takes a neutral stance on concepts that students should acquire. Cognitive developmentalists ignore questions about whether students should cope with their academic heritage, with everyday concerns, or with self-awareness. Instead, this view emphasizes the general reading processes needed to cope with reading tasks and seeks to develop skills not tied to any field of knowledge. An author's message, or a reader's personal interpretation of a message, is thought to be a by-product of the skill developed. For instance, one objective of a cognitive developmental program might be to teach students to summarize passages; the source of the materials would be incidental.

Another facet of this belief system is its emphasis on learners' progression through stages of development. This belief borrows heavily from the work of Piaget. Cognitive developmentalists emphasize learners' movements through increasingly complex stages of growth. Readers' strategies are seen to progress from simple to complex.

### *Secondary Reading Program Goals*

Totally discrete, ideologically pure secondary reading programs are difficult to find in practice. For instance, a romantic stance might underlie reading instruction certain days, and a utilitarian stance might be evident on other days. Such a blend allows educators to accommodate the range of students they encounter. We realize the existence of eclectic programs and choose to present program goals that represent ideals drawn from the different belief systems.

We also realize that belief systems are not the only forces affecting actual instruction. Practical concerns about available materials and student receptivity influence the directions a program takes (Brophy, 1984). Nevertheless, the ideologies proposed by Walmsley help set the stage for articulating goals for secondary reading programs. The broad goals that follow are presented in terms of teacher behaviors for secondary reading programs.

*Teachers will direct students to key concepts in their reading materials.* Students become confused when reading their school texts. Nicholson (1984) described several sources of this confusion; a frequent source came from students substituting the everyday meanings for the technical meanings of words. For instance, in a social studies lesson, *availability of markets* was presented as a factor that determined the location of factories. The text explained that factories were built in areas where a demand existed for the product. One confused student associated *markets* with the everyday meaning associated with buying food, and concluded that factories are situated close to grocery stores so workers can eat conveniently.

Guiding students to concepts is a time honored function of classroom teachers. Their goal is to provide the most efficient direction possible.

*Teachers will help students acquire and use independent learning from text strategies.* Independent learning from text strategies allow students to direct their own reading and to interact on their own with the information contained in unfamiliar passages. Students control their own learning processes when independent strategies are available. The value of independent strategies is summarized by the popular aphorism, "Give me a fish and I eat for a day. Teach me to fish and I eat for a lifetime."

One survey described by Tierney (1982) suggested that secondary school students' predominant study strategies were to read a text all the way through only once and to memorize portions of the text. More powerful learning strategies such as notetaking, summarizing, self-questioning, and predicting were used less frequently. Thus, helping students use independent learning from text strategies means providing appropriate learning situations while teaching students to use suitable learning strategies.

Teaching students independent learning from text strategies seems to best fit the cognitive developmentalist ideology. This stance emphasizes reading strategies that can be applied to any content for any reason. The teaching of learning strategies can occur during the study of the content areas (Herber, 1978), but the cognitive developmentalist stance emphasizes the development of strategies—not the concepts developed by the strategies.

*Teachers will promote positive attitudes toward reading.* The romantic tradition emphasizes attitudes toward reading more than the other traditions described by Walmsley. This tradition views attitude as valuable in its own right. Students who will not read are thought to be as disadvantaged as students who cannot read. Moreover, promoting attitudes fits with other belief systems due to the finding that students who value reading and read willingly tend to achieve at a higher level than students who do not. To illustrate, one study compared achievement and attitude data on 2,300 seventeen year old students who participated in the 1979-1980 National Assessment of Educational Progress (Walberg & Tsai, 1983). Measures of attitudes toward reading were found to correlate substantially with measures of reading achievement.

Although attitude toward reading frequently is presented as an all or nothing construct, a multidimensional conceptualization of reading attitude among high school students has been presented (Lewis & Teale, 1980). Dimensions of reading attitude were measured reliably with items such as "Being able to read is a great help to me in my school work," "I can have a better job if I am a good reader," and "The more I read, the more I learn about myself." The match between the dimensions of attitude tapped by these items and the academic, utilitarian, and romantic belief systems articulated by Walmsley is striking. Attitude deserves attention by teachers, and different facets of attitude are candidates for such attention. For instance, attitudes toward learning concepts traditionally taught deserve attention, as well as attitudes toward reading in order to learn about oneself.

*Teachers will accommodate readers who are at different levels of development.* Standardized test score results in the 1930s and 1940s substantiated the fact that secondary school students exhibited wide ranges of reading achievement (Moore, Readence, & Rickelman, 1983). Some students were found to be barely literate while others were judged to be achieving at proficient adult levels. The prevalence of this range of achievement today is confirmed by numerous reports (Education Commission of the States, 1983; Educational Testing Service, n.d.; Jencks, 1972).

Levels of reading achievement have been categorized according to various stages (Chall, 1983; Educational Testing Service, n.d.; Estes & Vaughan, 1978). A common feature of descriptions of reading stages is that students attend to different aspects of written messages. At some stages, students focus mainly on decoding words, and at other stages, students focus on integrating the information they gain with what they already know. Students at such different levels of reading development need assistance from secondary school teachers in order to progress. The cognitive developmentalist viewpoint described emphasizes challenging students with tasks appropriate for their levels so they can progress to higher levels of development.

*A Caution*

Many educators assume that students are directed to portions of textbooks and other materials to satisfy academic, utilitarian, or romantic concerns. Students are thought to depend heavily on reading in order to succeed in school. However, several independent investigators have pointed out that reading might actually play a relatively minor role in the lives of secondary students (Dolan, Harrison, & Gardner, 1979; Greenewald & Wolfe, 1981; Ratekin et al., 1985; Rieck, 1977; Smith & Feathers, 1983). Teachers frequently make reading assignments, but seldom expect students to develop understandings from the passages. That is, teachers assign a portion of text to be read but later, through lecture or discussion, they present the concepts the students were to have learned. Thus, many students can participate adequately in class without reading.

Because of the limited role of reading in some schools, teachers might have difficulty changing their instruction in order to direct students to key concepts in their reading materials, help students acquire and use independent learning from text strategies, promote positive attitudes, and accommodate readers at different levels of achievement. Any change is exceptionally difficult to implement in secondary schools (Cuban, 1982). Secondary school teachers face tremendous pressures from sources other than a desired reading curriculum (Cusick, 1973, 1983). Secondary teachers encounter from 100 to 200 students each day in class. Normal teaching loads consist of five or six daily classes and two to four daily preparations. Keeping the lid on potential outbursts requires much effort. Isolation from other teachers inhibits shared decisionmaking. Furthermore, improving students' reading performance is often perceived as the role of a trained reading specialist.

Educators concerned about secondary school reading programs should realize that secondary teachers typically require substantial changes before they focus on improving students' reading performance during daily instruction. The literature on teacher change is clear; teachers need to assume ownership of a program and actively participate in its development for such a change to happen (Farr & Wolf, 1984; Fullan, 1982; Lieberman & Miller, 1984). We caution educators to consider the goals presented in the preceding section only as starting points. The goals we described are broad statements of the general mission of an abstract secondary reading program. Educators who are developing goals for a specific, concrete program should use these statements as a springboard for discussion with their colleagues to devise goals appropriate for their particular situation.

## Is the reading laboratory approach a viable one for secondary schools?

The viability of the reading laboratory approach to instruction is an important question to consider because this approach counters the schoolwide approach implied in the preceding discussion of appropriate goals. Educators who seek the goals described in this chapter would likely implement a schoolwide approach to reading. Schoolwide reading approaches include reading instruction being integrated into all classrooms, content area teachers providing instruction, and teachers using the same materials for content and for reading instruction (Singer & Donlan, 1985). All students come into contact with reading instruction. Schoolwide reading programs show wide variation in operation, ranging from management and organization of reading skills instruction by a reading specialist, who provides assistance to all staff on a request basis, to intense involvement (and inservice training) of all faculty in providing this instruction.

Unlike a schoolwide reading approach, a secondary school reading laboratory approach typically consists of a separate classroom, a teacher who specializes in reading instruction, and materials designed specifically for reading instruction (Singer & Donlan, 1985). Placement in a reading laboratory generally comes as a result of low reading test scores, although content area teachers may refer students for assistance. Individualized (usually self-instructional) materials are frequently assigned to the students.

Surveys of secondary school reading programs reveal that schoolwide approaches are rare; most reading instruction occurs in separate classes devoted specifically to reading (Witte & Otto, 1981). Nevertheless, research evidence in support of separate reading classes is rare. Palmer and Brannock (1982) reviewed research related to the value of specialized reading services for students in high school. Few studies were located, and the quality of the research frequently was flawed. Palmer and Brannock tentatively concluded that special high school classes focusing only on reading skills produced few effects on students' long term reading performance. We suspect that isolated successes with individual students and schools exist, but the overall success rate seems to be modest in terms of improved reading achievement.

Although the research literature offers little support for separate secondary school reading classes, it should be noted that it also offers little support for any other approach. Nelson and Herber (1982, p. 151) recommended schoolwide reading programs "with confidence because we see this kind of instruction occurring in a variety of school districts and we know that it works." Despite this testimonial, there is little published research evidence to support schoolwide reading programs.

Conclusions about the value of reading laboratories, as well as other approaches to secondary school reading, seem to be based on personal beliefs and on information specific to one school or school district. Universal statements, such as "reading laboratories work," cannot be made because labs vary so much from school to school. Funding guidelines and local resources clearly affect the success of programs. A reading lab in one school might emphasize skill development through extensive use of library books, while another might emphasize only work sheets. One lab might support a schoolwide reading program, while another might exist in isolation. The enthusiasm and expertise of teachers might cause one lab to be successful, while the apathy and ineptitude of teachers might subvert another lab. One program might be supported by effective consultants; another might receive no consultative services. Rather than attempting to determine which types of reading programs are most viable, current researchers attempt to identify characteristics common to all successful programs.

## Summary

Goals for secondary school reading programs help educators work toward a clear consistent outcome. Knowing which belief systems accompany programs helps to evaluate program goals. Four belief systems are cultural reproduction, academic; cultural reproduction, utilitarian; romantic; and cognitive developmental. Few programs exemplify these belief systems in pure form; secondary reading programs tend to combine them. Some broad program goals derived from these beliefs are that teachers will direct students to key concepts in their reading materials, will help students acquire and use independent learning from text strategies, will promote positive attitudes toward reading, and will accommodate readers who are at different levels of development. Educators might use these four goals as the basis for developing more specific ones to fit their particular programs.

Conclusions about the value of the reading laboratory approach are difficult to form because each lab exists in a unique situation. Thus, educators who seek to know if reading laboratories are viable would do well to investigate characteristics that contribute to the viability of all programs and to carefully study the results of their own particular reading program.

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# 2

# Effective Schools/Effective Teaching Research

## What impact has effective schools research had on reading instruction in the content areas in the secondary school?

Reading researchers have only recently become interested in what goes on in classrooms (Hoffman, 1986). Effective schools research has yet to have a broad impact on content reading instruction at the secondary level. This chapter discusses the findings of effective schools research, offers some reasons why effective schools research often fails to become integrated into secondary school reading, and describes some emerging trends in content reading research related to effective teacher decisions.

### *Effective Schools Research*

The findings of effective schools research offer at least three definitions of effective teaching: teaching as classroom management, teaching as a relationship between process and product, and teaching as decisionmaking (Rupley, Wise, & Logan, 1986). Early research focused on the effectiveness of discipline and management techniques. In the 1960s and 1970s, research examined process-product relationships–relationships between instruction (process) and student achievement (product). Recently, effective teaching has been considered in the context of teacher intentions, goals, judgments, and decisions. Researchers usually study the classroom as the context for a teacher's decisions, yet research also has focused on the larger context of the school and the community. Each of these areas of research will be described.

*Effective teaching as classroom management.* Effective classroom management can be defined as "teacher behaviors that produce high levels of student involvement in classroom activities, minimal amounts of student behaviors that interfere with the teacher's or other students' work, and efficient use of instructional time" (Emmer & Evertson, 1982, p. 342). Many studies on classroom management occur in settings that involve reading (elementary reading or junior high English classes), yet few consider the relationship of effective management to effective reading instruction.

Teacher behaviors play a role in effective management. The purpose of defining these behaviors is not to recommend that, to be effective, teachers should use all of them in every classroom situation. The purpose is to present behaviors that, when used appropriately, *can* contribute to effective teaching.

"With-it-ness" is how much the teacher lets students know he or she is aware of their activities. "Overlapping" refers to a teacher's ability to take care of multiple classroom events. "Momentum" involves the smoothness with which the teacher moves from one activity to the next. "Group alerting" consists of the teacher's attempts to involve everyone in a classroom task. "Accountability" is how well the teacher holds students responsible for their work. "Challenge arousal" refers to a teacher's use of statements that motivate students to participate in an upcoming activity. Finally, effective classroom managers vary activities and continually present students with appropriate challenges. Teachers rated high on these behaviors generally get greater student involvement and less deviance from learning tasks than teachers rated lower on these behaviors (Kounin, 1970).

Considerable attention has been given to how teachers successfully apply these behaviors during the school year. An important step is to communicate expectations to students as early as possible, setting aside time in the first few days to discuss rules and procedures. Other recommendations include teaching classroom rules just like any other concept, that is, by demonstrating, modeling, and explaining one's expectations. Teachers also need to time explanations to coincide with the need for rules. For example, the first few days might be spent on procedures for grading. Procedures for small group discussion, however, can wait until the procedures need to be implemented (Emmer et al., 1982).

It is helpful to begin the year with simpler tasks, thus assuring a high rate of success. Students then can proceed to the more complicated tasks with a positive attitude and a clear sense of what is expected. This is particularly true of tasks requiring discussion (Emmer et al., 1982). It also may be better to start tasks in a whole class versus a small group format. Students usually are more accustomed to whole class discussion and may need to learn procedures for conducting discussions in small groups (Johnson, 1981).

*Effective teaching as process-product.* Process-product research deals with instructional activities, such as teachers' questions, their use of feedback, and the rate at which instruction occurs. In contrast to management activities, which are responsible for supporting and maintaining instruction, instructional activities are the central focus of teaching, usually to build students' understanding. Process-product research is interested in the impact of instruction on students' academic achievement (Hoffman, 1986).

Reading research contains few examinations of process-product relationships in the secondary classroom. In one study, Brophy and Evertson (1976) found that carefully structured, teacher directed reading activities positively influenced the achievement of seventh and eighth graders. Greater amounts of time spent on these activities also increased achievement.

More recently, studies have looked at ways to improve teachers' use of time during instruction. Effective use of time, often mistakenly referred to as "time on task," is one predictor of academic success (Brophy, 1986). Time on task is the amount of time students spend completing an academic task. A student can spend a considerable amount of time completing a task, but the use of time may not be effective. For example, students might be attempting to complete tasks for which they lack the necessary prior knowledge or skill. Effective use of time spent means that a student is prepared to complete an academic task efficiently, given the demands of the task.

A typical approach to improving use of time in the classroom is to study teachers' current use of time and then, for improvement, draw from effective schools research. For example, Stallings (1986) espouses a three stage approach to teaching basic skills: analyzing the existing classroom, using research findings to redesign lessons, and helping teachers train other teachers. Teachers in Stallings' program learn how to apply verbal interaction strategies, such as guidance and reinforcement of student responses. These strategies can have a positive effect on achievement.

Other programs organized in this fashion emphasize the importance of planning and preparation, presentation and explanation, verbal feedback, and the provision of guided practice and seatwork. These behaviors contribute most to academic success when they are teacher directed and consistent. Some approaches incorporate classroom management strategies, such as presenting rules and procedures and holding students responsible for behavior (Griffin & Barnes, 1986). When applied effectively, programs based on process-product research can make teachers more knowledgeable, improve instruction, and increase student achievement (Haggard & Better, 1986).

Recently, Shulman (1985) noted that process-product programs often reveal a mixed pattern of results. Not all behaviors work equally well in each classroom. In addition, there can be an overemphasis on standardized test scores instead of an attempt to understand why some practices work better than others. Effective programs attempt to match specific teacher behaviors to the needs of different contexts while focusing on explanations for the effectiveness of different practices.

*Effective teaching as teacher decisionmaking.* Research on teacher decisionmaking grew out of the belief that classroom management and instruction are necessary but not sufficient conditions for student success (Duffy, 1983). Missing is a concern for the complexity of the classroom and how teachers provide substantive instruction to students within the classroom environment. Duffy (1983) argues that, in the face of complexity, most teachers make decisions in favor of establishing productive routines based on management principles. A prevailing routine is "turn taking," in which instruction is assumed to be occurring when a teacher asks a question, a student responds, and the teacher reinforces or corrects. Unfortunately, while this approach maintains the flow of activities, it does not guarantee attention to helping students understand what they are required to learn (Duffy & Ball, 1986).

While most of the decisionmaking research has been conducted at the elementary level, there have been some attempts to describe secondary teachers' decisions. The findings of these studies parallel those derived from research on elementary teachers. For example, "recitation" is the focus of many secondary teachers' decisions (Hoetker & Ahlbrand, 1969). Like turn taking, recitation is a routine involving teacher questions, student responses, and teacher reactions. A teacher's decisions about recitation are often guided by a textbook: the teacher uses the text to ask questions and to determine whether a response is correct.

Routines like recitation contribute to classroom stability; that is, a predictable pattern is established in which both teachers and students know what is expected. However, routines can have a harmful effect on classroom instruction. Recitation can center more on factual recall than on developing students' thinking skills. Further, by overemphasizing the textbook, recitation can replace rather than support teacher decisionmaking (Cuban, 1984).

Effective classroom decisions are those in which a teacher uses knowledge to choose or design instruction that best meets the needs of a particular context (Shulman, 1985). A teacher can tap into subject matter knowledge, knowledge about instruction, and knowledge about textbook concepts. Textbooks, time constraints, and pressure of the curriculum can all interfere with a teacher's ability to make knowledgeable decisions (Roehler & Duffy, 1986).

Research is rare on how to help secondary teachers learn to make better classroom decisions based on their own knowledge and constraints. Chapter 11 provides specific recommendations in light of what is known about teacher decisionmaking at the secondary school level.

## Why is research on effective schools rarely integrated with secondary school reading?

One reason effective schools research is rarely integrated with secondary reading has already been identified: little research deals specifically with school effectiveness and reading at the secondary level (Good, 1982). Other problems include requiring teachers to implement all of the findings of effective instruction; ignoring the subtle and complex interactions between teachers, students, and situations; and mandating excellence without providing proper support and feedback. These problems are significant since they often result in staff development programs that sidestep a requirement identified by research on effective schooling – the need to directly involve teachers so they can develop their own decisionmaking abilities (Hunter, 1985).

Consider one program of instruction implemented in two separate contexts (Little, 1986). The program specified that teachers would learn to implement principles of effective instruction, but only through collaboration with staff developers, teachers, and principals. After three years, the program led to widespread, positive changes in one school district – from renewed professional commitments to changes in teachers' classroom behavior. In a second school district, teachers continued to express support, yet few practices from the program could be found in any classroom. These results can be attributed to differences in teacher involvement. Considerable collaboration among participants in one school helped in dealing with problems in the secondary curriculum, while collaboration in the second school was inconsistent and diffuse.

Successful programs are adept at fostering direct teacher involvement. Interactive Research and Development describes a program that engages secondary teachers, staff developers, and researchers in selecting and conducting research that can be translated into staff development training (Tikunoff & Mergendollar, 1983). Research and staff development in this program emphasize what is practical to classroom teachers. As a result, teachers are drawn into the research process and can focus on problems unique to their own situations. These programs implement the findings of effective schools research more than programs that ignore teachers' needs or the complexities of the secondary classroom.

School effectiveness research has had an uneven record of implementation in secondary schools because of the need to consider how the research is applied in school settings. It is crucial to incorporate effective schools research with what research says about creating change in schools.

### *Some Emerging Trends in Content Reading Research*

Recently, proponents of content reading have stressed greater attention to staff development and its relation to teacher effectiveness (Nelson & Herber, 1982). This trend could integrate effective schools and content reading research and address needs overlooked by many effective schools efforts – for example, the need to directly involve teachers. Much of this work is summarized in the chapter on staff development later in this volume.

A second trend is to examine how knowledge about content reading can help teachers make better classroom decisions about using textbooks and guide materials more effectively to help students learn from text (Conley, 1984). Effective use of textbooks and guides can be defined as use that facilitates rather than replaces teacher decisionmaking during instruction. In some secondary classrooms, teachers cover facts at the expense of more important ideas. In turn, students come to view the teacher, not the texts, as the primary source of information. This can defeat the overall objective of helping students become independent learners (Smith & Feathers, 1983).

Teachers who participate in long term staff development programs in content reading use knowledge about textbooks and guide materials to make purposeful classroom decisions. In one study, teachers who had spent three years learning about content reading consistently demonstrated goal oriented adaptations in their use of three level comprehension guides (Conley, 1986). Three level guides contain declarative statements written to require responses at literal, interpretive, and applied levels of comprehension. At the literal level, students place checks next to the statements that occur explicitly in the text. Interpretive statements embody an author's meaning if they can be supported by implicit relationships among explicit text statements. At the applied level, students are encouraged to integrate information gained from experience at the literal and interpretive levels with their own prior knowledge (Herber, 1978). An example of a three level guide appears in the Figure.

## An Example of a Three Level Guide

*Content Objective.* To learn that a person can keep self-respect without harming other people.

*Literal.* Place a check next to the statement if it says what the author says in *Shane*. Be ready with one example from the book to support your answers.

________ 1. Shane has a very mysterious past.
________ 2. Joe is a hardworking farmer.
________ 3. All the homesteaders respect and rely on Joe's good judgment.
________ 4. Shane and Marion have a strong affection toward one another.
________ 5. Shane and Joe battle Fletcher's men in Grafton's bar.
________ 6. Shane and Joe pay for the damages to the bar.
________ 7. Shane goes to face Wilson and Fletcher in a gun battle.

*Interpretive.* Place a check next to the statement if it says what the author means in *Shane*. Be ready with two examples from the book to support your answers.

________ 1. Joe wanted to prove that he and Shane could conquer the valley.
________ 2. Shane keeps Joe from the gun fight because he knows Joe will die.
________ 3. Shane fights Wilson and Fletcher for Marion.
________ 4. Shane never really could stay with Marion.
________ 5. Shane leaves because of his love for Marion.
________ 6. Shane leaves because he's a troublemaker.

*Applied.* Place a check next to the statements you can support from *Shane* and from your own experiences. Be ready with an example from both places to support your answers.

________ 1. Love conquers all.
________ 2. Friendship is more important than anything.
________ 3. It is not always easy to do the right thing.
________ 4. It is more important to like yourself than to worry about what others think.
________ 5. You don't have to fight someone to keep your self-respect.

Teachers in the Conley study (1986) used their knowledge about content reading to adapt their approach to the guides. Teachers talked about these adaptations as attempts to achieve different lesson goals. For example, teachers varied the distribution of questions they asked about each level of the guides. They asked more questions about literal statements in some lessons to make topics more familiar and emphasized interpretive statements in other lessons to bring out important text concepts. Sometimes, they stressed applied statements to develop real life problemsolving.

In a followup study, English teachers who were just learning how to use the guides demonstrated limited effectiveness in making decisions (Conley, 1985b). Having experienced less than one year of a staff development program in content reading, teachers in this study made similar goal directed decisions; for example, they emphasized interpretive statements to develop text concepts like characterization in a novel. These teachers' decisions were not as consistently effective as teachers in the previous study. Their questions sometimes deterred rather than supported lesson goals. In asking questions about applied statements to personalize ideas from a novel, one teacher overlooked the need to first develop a clear understanding of concepts in the novel. This second study suggests that teachers need time to acquire and apply knowledge about content reading if it is to play a role in effective decisions.

Teachers who become knowledgeable about content reading know how to use textbooks according to lesson goals and student needs. They can manipulate their use of content reading guides to help students understand ideas for different purposes. Further, they become more aware of the processes they use in making classroom decisions.

These implications are particularly important given recent work on the role of different types of context in reading (Smith, Carey, & Harste, 1982). Recall that context here refers to features of the classroom as well as to the school and the surrounding community. Teachers who learn to be sensitive to different contexts are in a better position to create situations in which reading will occur. This has been demonstrated with content reading in Alaska (Conley, 1985a). Teachers who learned about content reading in the Arctic were able to use reading to promote crosscultural understanding between themselves and their Eskimo students. Teachers who learn about content reading become more adept at making effective decisions in relation to varying tasks, cultures, and contexts.

## Summary

Effective teachers choose management and instructional activities that foster direct student involvement. Teachers should offer students a clear sense of what is expected and should carefully structure activities to sustain interest and increase opportunities to learn. Effective schools research has yet to have a broad impact on reading instruction in the content areas in secondary schools. Research dealing specifically with effective schools and secondary reading is rare. Staff development efforts need to build on direct teacher involvement. Staff development that combines effective schools and content reading research has the potential for broader impact. Effective secondary teachers use knowledge about content reading to make purposeful classroom decisions; rather than being dominated by the textbook, they use textbooks and guide materials to further students' understanding. The research on content reading can help secondary teachers make better classroom decisions.

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# 3

Donna E. Alvermann

# Developing Lifetime Readers

### What are some motivational techniques for working with secondary school readers to develop lifetime reading habits?

In the past decade we have witnessed an information explosion in the area of cognitive processes related to reading, but little or no activity related to motivation and reading (Shanahan, 1982). This imbalance between cognitive and affective concerns is perhaps partially explained by an observation made by Wigfield and Asher (1984, p. 423) in their chapter on motivational influences on reading in the *Handbook of Reading Research:*

> On the one hand, researchers interested in the development of achievement motivation processes generally have not explored how such processes operate in particular achievement contexts such as reading. On the other hand, reading researchers...often have conceptualized motivation in rather general terms and have not attended to specific processes or components of achievement motivation.

Regardless of the cause, the effect remains: we know more about *how* information from a text is stored and retrieved from memory than we do about *why* an individual might elect to interact with a text in the first place. Clearly, the shortage of research on motivational techniques for working with secondary school students to develop lifetime reading habits is indicative of the need to establish a research agenda aimed at improving our understanding of that area of literacy development.

The lack of research on motivation and its influence on reading has not kept that topic from surfacing regularly in practitioner oriented journals, methods textbooks, and popular trade books. A search of the past four years of the *Current Index to Journals in Education* uncovered more than two dozen journal articles about motivational techniques for working with secondary school readers to help them become lifetime users of print. Methods textbooks, particularly those that deal with young adult novels (Donelson & Nilsen, 1980; Reed, 1985), and trade books, written for the general public and distinguishable from textbooks (Carlsen, 1980; Fader et al., 1976), provide guiding principles and activities for motivating secondary school students to become lifelong readers. Six principles and their corresponding activities, chosen for their ease of implementation using fiction and nonfiction, follow.

### *Guiding Principles and Suggested Activities*

1. "The best way to motivate teenagers to read is to allow them to read books based on their needs, interests, and abilities....The difficulty for the teacher is in organizing a curriculum that will help students learn necessary skills, concepts, and ideas while they are reading books based on their individual needs, interests, and abilities" (Reed, 1985, pp. 195-196).

English teachers can avoid the pitfalls associated with plunging students too quickly into the "classics" if they will use young adult novels as starting points (or working models) for studying plot, setting, characterization, theme, and symbolism. According to Small (1977, p. 58), "Other subjects, mathematics and the sciences particularly, have made great use of the concept of the working model; but as literature teachers we have turned directly to the great and complex for examples of art and frequently experience not too surprising failure." A young adult novel that can serve as a model for understanding plot and interrelated subplots is *The Chocolate War* (Cormier, 1974). The importance of setting to the classic works of Austen can be introduced through a young adult novel entitled *Soul*

*Catcher* (Herbert, 1979). Similarly, the characterization of Updike can be modeled through the character development in *The Great Gilly Hopkins* (Paterson, 1978).

Social studies teachers can use the thematic unit as a vehicle for teaching the skills and concepts typically associated with the social sciences curriculum. For instance, a unit on political censorship and its control of people might include *The Kolokol Papers* (Bograd, 1983) or *The Beggar Queen* (Alexander, 1984). In *The Kolokol Papers*, the budding romance of the son of a human rights activist is pictured in contrast to the scene of turmoil created by those who dare to oppose the Soviet way of life. In *The Beggar Queen*, the turmoil caused by resistance to tyranny and the moral dilemmas evoked by fighting for a just cause are played against love, loyalty in friendships, and hopefulness. These two young adult novels can be used to pave the way for such classics as *Brave New World* (Huxley, 1932) and *1984* (Orwell, 1949).

Science teachers, too, can make use of young adult literature to motivate teenagers to read. Because most quality science fiction has a base in scientific fact, students can be helped to discuss the fictional book's plausibility in terms of the scientific facts presented in their content area text. *Stranger in a Strange Land* (Heinlein, 1963), for example, is a particularly appropriate book to use because the author extrapolates from scientific fact the necessary information for building a science fiction story.

2. "Related readings greatly aid in conceptualization development because they broaden readers' background and help them make associations between materials" (Smith, 1971, p. 485).

According to Wiesendanger (1986), the aim of related readings is to encourage students to read a variety of materials on the same topic. She suggests that teachers who use this technique need to provide materials ranging in difficulty from three reading levels below to three above the students' grade placement. The materials should include plays, television scripts, newspaper and magazine articles, pamphlets, and other print sources in addition to the traditional book. Varying the form of print sources can aid the development of concepts in the different content areas. For example, teachers can encourage students to read biographies, teen magazine book reviews, and newspaper accounts of famous individuals. Comparing the information learned from these varied sources can broaden students' perspectives on a particular concept. Using ideas from newspapers or magazines to tie information to particular content areas might lead to better informed citizens, as well as more motivated readers. Suggesting several books by the same author—for example, Hughes' *The Keeper of the Isis Light* (1981), *The Guardian of Isis* (1982), and *The Isis Peddlar* (1983)—is another form of providing opportunities for related readings. When multiple copies of several books are available for related readings, students can share their reactions.

3. "The only way to improve reading skill is by reading. Reading, like any other skill, takes practice" (Reed, 1985, p. 320).

With increased reading activity comes increased reading skill, which, in turn, can lead to a lifetime of reading (Yap, 1977). Turning reluctant readers at the middle or junior high school level into lifetime readers is a goal attainable only through practice, according to Beckman (1984). To ensure that unseasoned or reluctant readers gain the practice they need, Beckman offers several guidelines, based on observations of students over the years. She suggests introducing new or reluctant readers to stories that begin on page 1. As Beckman puts it, "they don't want to know all the details of the flora, fauna, and smells of the setting before getting into the plot" (1984, p. 84). *This Time Count Me In* (Wood, 1980) is one paperback that exemplifies what Beckman is talking about.

Selecting books that have a small cast of characters who use lively dialogue (as opposed to long descriptions) to carry the action is another guideline useful for turning reluctant readers into eager readers. Preparing students adequately for stories that have flashbacks or shifts away from the normal story sequence is a third guideline. Books with dual narrators, like those with flashbacks, will present too many complications to make them motivate an uninitiated reader (Zindel, 1968). With teacher assistance, however, reluctant readers will learn to enjoy the variety offered by these literary conventions.

Beckman (1984) also suggests a technique that motivates students to read based on their peers' evaluation of books. Students can use index cards to record their ratings of a book along with two or three sentences giving personal reactions. The cards can be stored in plastic postcard holders (similar to billfold picture holders) and hung from chalkboard hooks. These displayed "silent book talks" provide other students with highly valued peer information about books. At year's end, students may elect to take their cards home as tangible evidence of their progress toward becoming lifetime readers.

*The New Hooked on Books* (Fader et al., 1976), first published in 1966 as *Hooked on Books: Program and Proof*, has influenced many English teachers to consider young adult literature in a favorable light (Donelson & Nilsen, 1980). One of Fader and his colleagues' techniques for motivating students to read, "saturation-diffusion," is based on the notion that students should be surrounded with paperbacks, newspapers, and magazines. The small amount of research that exists on the saturation-diffusion technique suggests that surrounding unmotivated, poor readers with paperbound books can turn them into motivated readers (at least motivated in comparison to other poor, unmotivated readers). McNeil (1976, p. 200) concluded that "reading appears to be an age related phenomenon whose joys are learned by practice and whose pleasures increase with the growth of greater skill." Reed (1985) surveyed 250 unmotivated, poor readers in high school who had been exposed to the saturation-diffusion technique. She found they were not only choosing young adult paperbacks; they also were requesting instruction in the "classics."

4. "Students must be helped to feel good about their ability as readers. They must be convinced that they can read and must be shown that reading need not be punishing, but can be enjoyable" (Reed, 1985, p. 323).

Students who are highly motivated to read perform better on measures of reading achievement (Ryan, 1979) than do students who are less motivated; even slow learners, when properly motivated, are able to respond to complex source materials (Curtis &

Shaver, 1980). Numerous research studies have shown that individuals who feel in control of their own learning achieve better on tasks requiring reading (Stone, 1984). These individuals are better at retaining relevant information than their counterparts who perceive others as being in control of their learning. Stone (1984) has drawn several implications from this research that can help teachers overcome students' dislike and fear of reading. For students who have feelings of low control over their ability to learn by reading, teachers can give more explicit instructions on how to complete a particular reading assignment; for example, they can break the larger task into several smaller ones so that students will feel a sense of accomplishment at shorter intervals. Teachers also can structure learning from text activities so that students feel less dependent on the teacher for reinforcement. Finally, teacher imposed standards of excellence can be replaced by grading systems that take into account performance contracting and increased student responsibility for learning.

Whether individuals perceive ability, effort, task difficulty, or luck as the cause for success or failure in reading will influence their future expectations (Wigfield & Asher, 1984). For instance, a student who attributes success to luck and failure to lack of ability will more than likely feel personally inadequate and incapable of sustained achievement. If low ability is the perceived cause (not necessarily the true cause) for an individual to dislike or fear reading, a teacher can manipulate the learning environment so that the low ability reader is made aware of the relationship between personal effort and achievement. A teacher might begin by helping students persist in accomplishing a specific reading task, whether for pleasure or in relation to a class assignment. Once students have perceived that persistence, not lack of ability, accounted for the positive outcome of a specific reading task, they are on the way to self-motivated learning. Even students "who have had many failure experiences early on [can] become better achievers if they are given tasks at which they can succeed, and they learn to attribute failure to nonability factors" (p. 438).

Be the Focus is a strategy that can be used with unmotivated readers who have a low degree of self-confidence and who are unwilling to take risks (Gold & Yelin, 1982). The strategy is based on Atkinson's theory (1964) about the need to provide a learning environment wherein readers meet praise and support rather than failure. It also incorporates an inquiry approach to learning and emphasizes the development of categorizing, organizing, inferring, and verifying. A teacher who uses Be the Focus can provide each student with an equal opportunity to express opinions in a structured, safe, small group setting. The three phases of the strategy follow.

*The prereading discussion.* In this phase, which takes approximately 20 minutes, the teacher presents in one statement one important issue from the reading assignment. Students are divided into groups of three and within those groups they decide who will go first, second, and third (i.e., "be the focus" person) in responding to the teacher's statement. Each focus person is free to agree, disagree, or present new information relative to the statement. Each has two minutes to speak, after which the group takes two minutes to summarize its reactions and to designate the individual who will present the summary to the class during the whole group discussion. After the summary, the teacher emphasizes the new vocabulary the students will need to know in the second stage of the strategy.

*The silent reading stage.* In this stage the students read their texts silently to discover which of their group summaries – from those the teacher has written on the chalkboard – are substantiated, refuted, or not addressed by the textbook author. As they read, they make notes to remind themselves of the facts they will use in the postreading discussion.

*The postreading discussion.* In this final phase of the strategy, the teacher guides students' attempts to substantiate or refute their prereading responses. Notes are made on the chalkboard to help students remember what they read. The unaddressed issues become springboards for a supplementary list of reading activities from which the individual student is free to choose.

The teacher who uses Be the Focus may prefer to substitute news magazines or other suitable print sources for the students' regular content area textbooks. Whatever the print source, the content should be of high interest and contain easy vocabulary. Interesting, easy material will help unmotivated, poor readers feel good about their ability as readers.

5. "Reading aloud is motivational. The teacher who reads aloud to students is a model who embodies the fact that reading can be fun" (Reed, 1985, p. 372).

The annual Books for Young Adults Poll is a combined effort of the College of Education and the School of Library and Information Science at the University of Iowa. It samples the reading choices of tenth through twelfth graders. Using the results of this poll (or any similar poll that seeks students' opinions on books) can be helpful to the teacher who wishes to read aloud to students a few pages a day. A recent Books for Young Adults Poll turned up such favorites as these:

Asher, Sandy, *Missing Pieces*, Delacorte, 1984.
Bethancourt, Ernesto T., *The Great Computer Dating Game*, Crown, 1984.
Coleman, Hila, *Nobody Told Me What I Need to Know*, Morrow, 1984.
Howe, Norma, *God, the Universe, and Hot Fudge Sundaes*, Houghton Mifflin, 1984.
Perske, Robert, *Show Me No Mercy*, Abingdon, 1984.
Ruby, Lois, *This Old Man*, Houghton Mifflin, 1984.
Sleator, William, *Interstellar Pig*, Dutton, 1984.

Another source content area teachers can use in selecting books for reading aloud is the annotated book list that appears at the end of most teachers' editions of textbooks. Reading aloud from books on this list is a way of broadening students' understanding of a particular area of study.

Storytelling can be a form of sharing books aloud. A sampling of titles that teachers and students can use to motivate others to read include these:

Danziger, Paula, *This Place Has No Atmosphere*, Delacorte, 1986.
Fox, Paula, *One-Eyed Cat*, Dell, 1985.
Hall, Lynn, *Just One Friend*, Scribner's, 1985.
Mazer, Harry, *When the Phone Rang*, Scholastic, 1985.
McKinley, Robin, *Beauty*, Pocket Books, 1985.
Zindel, Paul, *Harry & Hortense at Hormone High*, Bantam, 1985.

The important thing to keep in mind about reading aloud and engaging in storytelling is that these experiences may provide the student – especially the one who has never finished a book – with a feeling of the enjoyment that can come from reading and completing a book. Also, if teachers choose wisely the books they read aloud, students' interests in different forms of writing may be expanded.

6. Conflict is part of our world and it presents itself in meaningful ways, which, in turn, demand critical decisions from each of us (Lunstrum, 1981).

A motivational technique using conflict to enhance content area learning is Lunstrum's plan for heightening students' interest in what they are reading. According to Lunstrum, using controversy in the classroom is a tradition. In 1933, Dewey advocated introducing problematic situations in the belief that insights arising from such situations would increase learning. From a psycholinguistic perspective, the technique takes into account the notion that reading consists of interacting with an author as a reader, taking risks to predict meaning, and using one's background of experiences to understand language (Goodman & Burke, 1980; Smith, 1971). From the field of psychology, the technique is derived from the notion that inner conflict, or dissonance, makes a person feel uncomfortable until equilibrium is again established. That is, readers faced with controversy will set their own learning goals in an attempt to reconcile opposing elements and thus bring about a reduction in dissonance (Festinger, 1957). In actual classroom situations, a teacher who uses Lunstrum's technique might proceed as follows:

*Step 1.* Introduce the class to the idea of planned controversy and to the need to read to settle points of contradiction and uncertainty. Assure students that their rights to privacy and to ideas not held by others will be respected.

*Step 2.* Establish background for the controversy by having students read their textbooks plus primary source materials (diaries, collections of personal letters) or view films and videotapes on the topic. Predictions made before reading and viewing can be used to stimulate interest and build involvement. Always check or verify the accuracy of these predictions through postreading discussions.

*Step 3.* Create an awareness of the controversy by involving students in a simulation in which they are forced to take positions and make decisions related to the controversy.

*Step 4.* Increase the dissonance level, and then initiate activities for reducing it; for example, assign additional readings or invite authorities on the topic to speak to the class. If students remain relatively uninvolved after participating in these dissonance reducing activities, create a role playing situation around a particularly emotional issue in the controversy. When the dissonance level is appropriately high, encourage students to read further to identify the motives or values that may have led persons involved in the controversy to behave as they did.

### *Adolescent Reading Preferences*

Finally, regardless of which guiding principle (or sets of principles) are followed, teachers must keep abreast of students' reading preferences if students are to become lifetime readers. Until recently, knowledge about adolescent reading preferences was based primarily on descriptive research that focused on library selections (McCarty, 1949); book club orders (Algra & Fillbrandt, 1970); checklists of adolescents' favorite books (Larocque, 1974); and guides for teachers, librarians, and parents (Agee, 1984; Carlsen, 1980). Beyard-Tyler and Sullivan (1980) departed from this descriptive approach of inferring preferences from books selected or read. They systematically manipulated two variables, preference for the type of theme and preference for the gender of the main character, while carefully controlling other variables that may affect reader preferences. There were 576 subjects representing grades seven, nine, and eleven in the theme preference study, and an additional 576 from the same grade levels in the gender preference study. Students read the synopses of four contemporary novels. With respect to theme preference, stories in which adolescents successfully overcome their problems were favored over stories in which they meet failure or in which no solution is offered. There was a preference for same gender main characters, although girls' preferences for female characters diminish as they grow older while boys' preferences for male characters grow stronger with age. Beyard-Tyler and Sullivan speculate that any significant changes in gender roles will have an effect on adolescent preferences.

## Summary

Although there is a shortage of research specifically related to motivational techniques for developing lifetime reading habits among secondary school students, the literature written for practitioners is filled with a variety of ideas for stimulating reading, some of which were presented in this chapter. The guidelines include permitting students to read materials based on their needs, interests, and abilities; encouraging students to read a variety of materials on the same topic; providing students with many opportunities to read; showing students they can succeed in reading; modeling for students through reading aloud that reading can be fun; and introducing students to controversy as a technique for heightening their interests in reading materials. A knowledge of adolescents' reading preferences should influence what a teacher does to develop lifelong reading habits.

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# PART TWO
# Knowing What

# 4

Donna E. Alvermann

# Learning from Text

## What influences how and what secondary school students learn from text?

According to the latest National Assessment of Educational Progress (n.d., p. 6) of reading trends in the United States (conducted between 1971 and 1984), "virtually all thirteen and seventeen year old students can read *basic* material, and 84 percent of the seventeen year olds still in school have acquired the *intermediate* reading skills and strategies necessary to understand specific and general information in relatively lengthy reading passages." From these data, it would seem that secondary school students are able to learn from text, particularly text that requires only intermediate level reading skills. The more difficult reading skills and strategies (those requiring students to restructure and synthesize textual material) are demonstrated by less than 5 percent of the seventeen year olds and less than 0.3 percent of the thirteen year olds. Understanding why students are not experiencing success with the more difficult kinds of reading will be a prime research objective in the decade to come.

In this chapter, we look at two factors that influence how and what students learn from their textbooks: text structure and the reader's background knowledge.

### *Text Structure*

Text structure refers to the hierarchical arrangement of sentences and paragraphs within a text. The hierarchy exists so that some content can be superordinated or subordinated to other content. Some of the more common structures found in expository, or informational, text are these four organizational patterns: simple listing of ideas related to a topic, time order, comparison/contrast, and cause/effect (Herber, 1978). Literary texts do not lend themselves to such clear-cut distinctions in text structure, though typically they are lumped together and described as having narrative type structure. One example of a narrative structure is the common arrangement of content in children's stories; setting, people, their goals, and the actions they take to reach their goals.

Although text structures are typically classified as being one of two general types, expository or narrative, some theorists (Spiro & Taylor, 1980) argue that this conventional text classification scheme is misleading and should be abandoned. In its place, they would substitute a classification scheme that takes into account the various psychologically relevant properties of *all* text, such as the underlying organizational structure, sentence complexity, vocabulary difficulty, and discourse function (i.e., whether text was written to persuade, inform, entertain, or aesthetically please). Despite our intellectual support for the latter classification scheme, we use the more conventional labels of "expository text" and "narrative text" because they permit greater ease in discussing the major research findings related to text structure.

*Expository text.* Some research points to the conclusion that the better a text is organized, the better it is remembered (Armbruster & Anderson, 1981; Calfee & Drum, 1986; Goetz & Armbruster, 1980; Meyer, 1984). The work of Meyer and her associates (1980) has demonstrated the effectiveness of the structure strategy in providing ninth graders with a systematic learning and retrieval aid. The use of the structure strategy involves a reader in following the organizational pattern of a text. For example, students who follow the author's comparison/contrast structuring of a textbook chapter on deserts of the world will look for relationships in text that subsume all or large chunks of information pertaining to deserts in the Eastern Hemisphere. They do this so they can contrast that subset of ideas to a similarly derived subset about deserts in the Western Hemisphere.

In the study by Meyer and others (1980), students who did not use the structure strategy merely listed ideas from the passages they had read. There was no evidence of any attempt to interrelate ideas. In contrast, the students who did use the structure strategy contrasted doctors' viewpoints about the loss of body water with coaches' views on voluntary dehydration. Similarly, students matched solutions to specific components of a problem after reading a passage that described various solutions to the problem of oil spills from supertankers. Compared to nonusers, students who used the structure strategy had better recall of the textual information.

The practical applications of this line of research are somewhat limited by the type of text students encounter in their regular content area courses. For instance, students rarely have the opportunity to read materials as well-formed as those that appear in research studies. Chapters that appear in actual textbooks frequently contain a mix of organizational patterns. It is not uncommon for students to encounter simple listing, time order, comparison/contrast, and cause/effect within one chapter. When this situation occurs, the teacher may choose to focus students' attention on the dominant organizational pattern or, alternatively, on the pattern most useful from a meaning point of view. Herber's (1978) organizational patterns guide (see Figure 1) is one type of instructional aid for focusing students' attention on a particular text structure.

For purposes of sorting out the hierarchical relationships among ideas, students must first be able to recognize the different types of text structure common to their subject matter texts. Initially, teachers may cue students to rely on signal words such as "however," "although" (comparison/contrast text structure), or "therefore," "consequently," and "as a result" (cause/effect structure). Vacca (1981, p. 143), has provided a series of verbal signals (see Figure 2) useful in cueing the reader about the different text structures.

Teaching students to recognize different patterns of text organization is not enough. Students also must be shown how knowing the structure of a text helps them to understand the relationships among ideas in the text. For example, they can use text structure to locate main ideas and supporting details. Some research suggests that "instruction in identification and utilization of text structure

### Figure 1
### Example of a Time-Order Pattern Guide

Content Objective: Interest in alchemy spread across continents and centuries.

Part 1. *Directions:* Authors use the time-order pattern when they want to show you how something grew or developed. Below is a list of developments that mark the growth of alchemy. Beside each development is a blank. You are to find the "time" associated with that development and write it in the blank. (Hint: Sometimes authors give you a date; other times, they may use a signal word such as "later" or "thereafter.")

| *Time* (Answers given) | *Development* |
|---|---|
| In the beginning | 1. Alchemy was rooted in the Bronze Age cultures of Egypt and Mesopotamia (p. 24, para. 2). |
| Fourth century A.D. | 2. Through wars and trading, alchemy spread to other cultures, so it was not surprising to find a Chinese alchemist (p. 25, para. 1). |
| Later | 3. As the Moslems conquered the ancient lands where alchemy had begun, they adopted it (p. 25, para. 6). |
| Still later | 4. Arabic alchemists developed the theory that metals were composed of mercury and sulfur (p. 26, para. 2). |
| By the fourteenth century | 5. The great interest in alchemy died down (p. 27, para. 1). |
| Sixteenth century | 6. Alchemists turned from trying to change metals into gold and began to prepare medicines (p. 27, para. 5). |

Part 2. *Directions:* Below is a list of statements. If you agree with a statement, place a check in the blank next to the statement in the Agree column. If you think the author would agree with you, put a + in the blank next to the statement in the Author column. Be ready to discuss your answers with other members of your group.

| *Agree* | *Author* | *Statements* |
|---|---|---|
| ______ | ______ | 1. Every scientific discovery makes the one preceding it seem silly. |
| ______ | ______ | 2. The past is but the beginning. |
| ______ | ______ | 3. What we do in life depends on what others did before us. |

should precede instruction in identification of main ideas" (Meyer, 1984, p. 137). This is a departure from the traditional approach: teaching students to find main ideas so that text relationships such as cause and effect can be followed.

**Figure 2**
**Verbal Signals for Four Text Structures**

| Enumeration | Time Order | Comparison/ Contrast | Cause/Effect |
|---|---|---|---|
| to begin with | on (date) | however | because |
| first | not long after | but | since |
| second | now | as well as | therefore |
| next | as | on the other hand | consequently |
| then | before | not only... but also | as a result |
| finally | after | either...or | this led to |
| most important | when | while | so that |
| also | | although | nevertheless |
| in fact | | unless | accordingly |
| for instance | | similarly | if...then |
| for example | | yet | thus |

As Pearson and Camperell (1981, p. 28) have noted, "That text structure influences comprehension...is not really at issue; what is at issue is the precise way in which the influence is exerted." More information is needed on how the use of text structure influences *what* students learn from text.

Using text structure to comprehend an author's message aids students' retrieval of information at a later time, as on a test. Some researchers attribute this ease of retrieval to the greater levels of processing required when students actively search their minds and their texts for meaningful relationships between superordinate and subordinate ideas (Craik & Lockhart, 1972).

Another approach to understanding how the use of text structure influences what students learn from their reading involves looking at less than optimally constructed text. When textbook writers ignore certain principles of good writing and fail to signal the reader explicitly as to how the text is structured, we say the text is inconsiderate (Armbruster & Anderson, 1981). Inconsiderate text, as its name implies, makes learning from print more difficult. A text is judged on its degree of "considerateness" according to the following criteria:

- *Structure.* A plan for how ideas are arranged and connected in text.

- *Coherence.* The clarity of relationships among ideas both within and across sentences and paragraphs.
- *Audience appropriateness.* A match between what the reader already knows and what the author of the text has assumed the reader knows.
- *Unity.* The degree to which only relevant information is included to support the author's assumed purpose.

Of these text features, structure has received the most research attention (Goetz & Armbruster, 1980; Meyer, 1984), followed by coherence (Bransford & Johnson, 1972; Halliday & Hasan, 1976; Pearson, 1974-1975), and audience appropriateness as it relates to prior knowledge (Anderson et al., 1977). Unlike the other three text features, unity has received little or no attention. In fact, according to Armbruster and Anderson (1981, p. 33), "a case for the importance of unity can be made more firmly on theoretical than empirical grounds." The theoretical argument rests on the notion that short term memory constraints may prevent a reader from integrating incoming information with the information present in short term memory when the text contains many irrelevant ideas (Miller, 1956). Thus, text that adheres to the unity maxim may guard against short term memory overload and subsequent comprehension failure.

*Narrative text.* At the secondary school level, studies that focus on the influence of narrative text structure on students' learning from text are less numerous than those dealing with exposition. Most researchers interested in studying the effect of narrative text structure on learning have tended to focus on the young child more than on the student in middle, junior, or senior high school. Two exceptions, important because of their large scale designs, are studies conducted as part of the National Assessment of Educational Progress (NAEP, 1981) and the International Evaluation of Educational Achievement (Purves, 1973).

The NAEP report on students' ability to read, think, and write pointed out that certain characteristics (such as genre, form, and content) of a narrative selection influence students' responses. For example, selections that contained metaphors embedded in unfamiliar themes produced greater inferential responses than any other selection type. In contrast, selections dealing with themes more closely tied to students' own backgrounds of experiences produced a larger percentage of personal analytic responses.

The International Evaluation of Educational Achievement focused on literature education in ten countries, including the United States. Basically, the results of this study and the NAEP are in agreement: The nature of a selection definitely shapes the reader's response. In short, whether we are talking about the influence of expository text or narrative text, the following generalizations seem to hold (Beach & Appleman, 1984):

- Texts, including expository and literary (narrative) texts, differ considerably according to their organizational structure.
- These different structures require different reading strategies.
- Readers' ability to employ these strategies varies with their cognitive skills and prior knowledge.

### *Suggestions for the Teacher*

Authors of secondary reading methods textbooks have begun to incorporate what is known from the research on text structure into several suggested practices for content area teachers. These suggestions include:

- Take into account the effect of a text's structure and its degree of considerateness in the assessment of reader comprehension and retention.
- Examine a text for its structural organization as one of the criteria used in adopting a textbook.
- Judge the appropriateness of a text from the perspective of the student reader.
- Compensate for any deficiencies in a text by teaching students the appropriate strategies to use in comprehending inconsiderate text (Vaughan & Estes, 1986).

## What effect does prior knowledge have on learning from text and how can teachers help students use their prior knowledge?

An interesting paradox about learning from text is that you must know a lot about a topic before you can learn more. An example drawn from the work of Charniak (1972), a researcher in the area of artificial intelligence, illustrates just how dependent we are on our background experiences, or prior knowledge, to comprehend even a simple, two sentence text such as:

> The little girl heard the ring of the ice cream vendor's bell.
> She ran inside to get her piggy bank.

As readers, we have to know that an ice cream vendor sells a product that tempts young children and that requires money in the amount a little girl is likely to have in her piggy bank. More specifically, we have to know that piggy banks usually hold coins. Although none of this information is stated explicitly, we used our prior knowledge about ice cream vendors and the likelihood that the little girl would want some ice cream to infer that she dashed inside to get her money before the vendor moved on.

If the simple, two sentence text that you just read made sense, it is probably because you evoked your buying-ice cream-from-a-vendor schema. The term *schema* (Bartlett, 1932) is used to represent information stored in an organized way in an individual's memory and based on repeated encounters with a particular person, place, thing, or event.

Cognitive psychologists like Rumelhart (1980) have suggested that prior knowledge facilitates learning from text because the reader can use it to fill the empty "slots" of a partially completed schema. Having prior knowledge about the function of a piggy bank let us fit the incoming text information into our buying-ice cream-from-a-vendor schema. Our interpretation of what the author has attempted to communicate is gradually refined until we are confident that our meaning makes sense.

Prior knowledge of a situation is not always sufficient in itself; it is also important to have the appropriate context, or setting, in which to make sense of what is read. A widely quoted passage from Bransford and Johnson (1972, p. 719) illustrates the importance of an appropriate context for determining the meaning of print. Read the following passage and, if it doesn't make sense, refer to Figure 3.

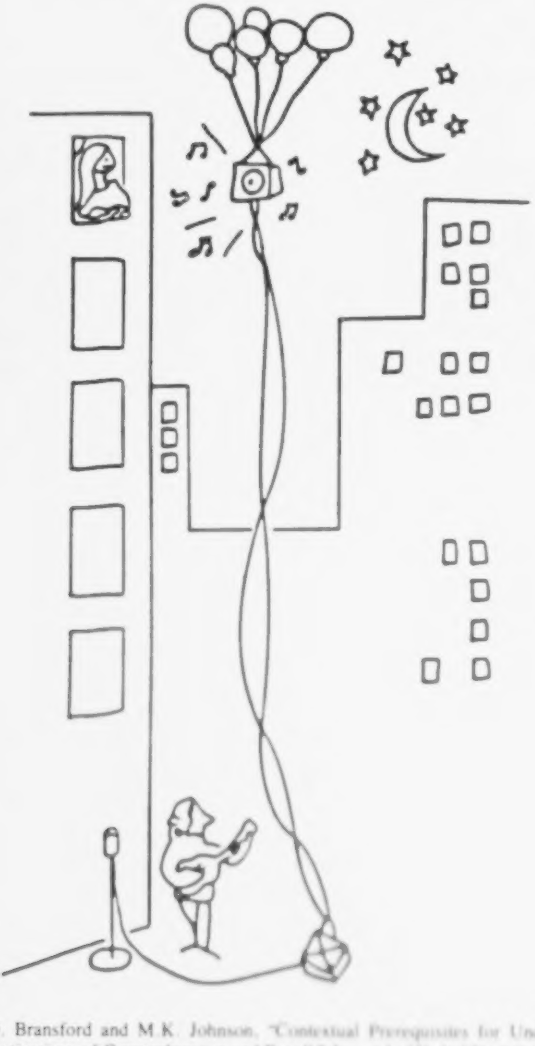
> If the balloons popped the sound wouldn't be able to carry since everything would be too far away from the correct floor. A closed window would also prevent the sound from carrying, since most buildings tend to be well insulated. Since the whole operation depends upon a steady flow of electricity, a break in the middle of the wire would also cause problems. Of course, the fellow could shout, but the human voice is not loud enough to carry that far. An additional problem is that a string could break on the instrument. Then there could be no accompaniment to the message. It is clear that the best situation would involve less distance. Then there would be fewer potential problems. With face to face contact, the least number of things could go wrong.

### *Helping Students Use Their Prior Knowledge*

John Carroll, an educational psychologist, pointed out that a student's learning is a function of the time spent on learning divided by the time the student needed to learn. Mindful of Carroll's principle of learning (1963), it seems reasonable to suggest that a student's degree of success in using his or her prior knowledge to learn from text will be in direct proportion to the quality of instruction provided. Some guidelines for what that instruction might look like are adapted from an excellent chapter on learning to learn from text by Tierney and Pearson (1982).

*Guideline 1.* Prior to reading, the teacher would assess whether there is a match between what an author assumes students will know and what the students' background knowledge actually is. This assessment might be as informal as discussing with students what they know about a specific topic prior to making a textbook assignment related to that topic. Or it might involve using PReP, a strategy especially designed to assess students' prior knowledge of a specific concept (Langer, 1984). (See Chapter 12 for a description of PReP.) Knowing the availability of a particular schema enables the

**Figure 3**
**Appropriate Context for the Balloon Passage**



* From J.D. Bransford and M.K. Johnson, "Contextual Prerequisites for Understanding: Some Investigations of Comprehension and Recall," *Journal of Verbal Learning and Verbal Behavior*, 1974, *11*. Reprinted by permission.

teacher to develop the necessary concepts with the students prior to their reading the text. Even more important than assessing the availability of a particular schema is the determining of whether students hold misconceptions about a topic. Failure to take into account students' conflicting and culturally specific prior knowledge may result in inaccurate learning from text (Alvermann, Smith, & Readence, 1985; Lipson, 1983). In short, to neglect assessing students' prior knowledge is to invite potential problems in comprehending what might otherwise be considered appropriate learning materials.

*Guideline 2.* Determining whether schema engagement problems are present prior to reading, during reading, or after reading is another way to help students make use of their prior knowledge. This guideline assumes that readers already possess accurate and appropriate background knowledge but do not use it. An instructional tool that is useful in helping students engage their background knowledge about a topic is a prediction guide (Herber, 1978). Essentially, this guide consists of several statements related to important ideas in the to-be-read material. Students place check marks before the statements or ideas they believe they will find addressed in the text. Then, working in small groups, they discuss their reasons for believing as they do. After reading, students compare and discuss in their groups what they predicted they would learn with what they actually learned. Prediction guides should include distractor statements as well as text related statements.

*Guideline 3.* During guided reading, the teacher might need to assess whether students' problems in learning from text are the result of being "too reader based" or "too text based" in their approach to understanding the author's intended message. Students who tend to be too reader based are not aware of what they don't know. Their insensitivity to comprehension monitoring may be the result of falsely assuming that they know more about a familiar topic than they actually do. Several options are open to the teacher in terms of helping this type of reader. For example, the teacher might call attention to subtle but important text signals such as time order words (before, when, after) in a science experiment. Or the teacher might encourage students to monitor their interpretation of a text by inserting questions after each of several key paragraphs. Students who tend to be too text based may deny what they know to be true from their experiences outside of school, perceiving those experiences to be of no use in school related tasks such as reading (Spiro, 1977). This type of reader can be helped to apply background knowledge through prereading and postreading discussions in which the teacher praises the student for seeing relationships between in and out of school learning.

*Guideline 4.* As a postreading followup, the teacher would assess the adequacy and the extent of a student's understanding of text. Two issues are at stake: the notion that adequate understanding is relative to an individual's purpose for reading and that the real test of learning is whether it is transferred. What is considered adequate understanding may vary with the person's purpose for reading; for example, one may read to get the gist of a passage or to memorize specific details of that passage. Both are legitimate purposes, and as long as teachers assess according to purpose, determining the adequacy of a given response should be straightforward (Champagne & Klopfer, 1984). The second issue, whether students can apply what they have learned in one situation to a new but similar situation, is somewhat more difficult to measure. Unlike elementary teachers, secondary teachers do not have the opportunity to observe how students may attempt transfer of learning from one subject area to another. At best, secondary level teachers must rely on teaching for transfer. One simple but effective way for teachers to foster greater transfer, and thus independence, in student learning is to hold postreading discussions in which students are given an opportunity to justify their responses on the basis of their prior understandings interacting with the newly acquired textual information. The resulting modification or refinement of students' existing schemata will help to ensure that they are that much more ready to learn the next time. In short, analyzing the effect of prior knowledge on learning from text may enable students to learn how to learn.

## Summary

Secondary students do learn from text, but they are proficient in applying only basic and intermediate level skills and strategies to what they read. Based on data reported for a thirteen year period by the National Assessment of Educational Progress concerning reading trends in the United States, secondary school students lack the necessary skills for restructuring and synthesizing difficult material.

The structure of a textbook's content influences comprehension. Students who use their knowledge of how a text is structured comprehend and remember more information than students who ignore the structure. Teachers who make use of the research on text structure can affect both student learning and the procedures used in assessing comprehension and adopting textbooks for classroom use.

Encouraging students to use their prior knowledge of a topic can lead to improved comprehension of text. Teachers who include in their instruction plans for tapping and assessing students' prior knowledge before, during, and after reading can assist students in developing the necessary concepts for understanding what they read.

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# 5

Donna E. Alvermann

# Comprehension/Thinking Skills

## What kinds of classroom instruction promote increased comprehension of text and learner independence?

There is no shortage of methods for teaching students to comprehend. Professional journals and methods texts regularly feature descriptions of teaching strategies specifically designed to increase students' ability to comprehend text. No wonder subject matter teachers often find themselves in the difficult position of choosing strategy A over strategy B, or even of relying entirely on the lecture method.

Not all instructional strategies are equally effective in promoting students' comprehension at the secondary school level. Some are backed by conventional wisdom or a long tradition of use, but there is no empirical basis for believing in their effectiveness. We recommend using instructional strategies that have withstood the rigor of scientific investigation, especially if evidence suggests that these strategies also facilitate transfer of learning (and, hence, learner independence).

A convenient way to categorize the various instructional strategies for teaching comprehension is to use the elements of effective learning as category headings. These elements include focusing attention on the most informative aspects of the text to be read, elaborating on and organizing new material so it can be easily remembered and recalled, and knowing when and how to use a reading strategy effectively (Gagne, 1985).

The rest of this chapter discusses the elements of effective learning in relation to increasing students' comprehension of text.

### *Strategies for Focusing Attention*

Instructional strategies that focus students' attention prior to reading on material that is most relevant to comprehending the text are thought to create expectancies within the learner. These attention focusing, or prereading, strategies typically include either activities that *enrich* or questions that *activate* learners' background knowledge.

*Enrichment.* Strategies that enrich background knowledge add relevant information to students' existing store of related information. Four successful methods are the use of analogies, oral previews, thematic organizers, and structured overviews. From research that has looked at the use of *analogy* to explain unfamiliar or abstract concepts, we have learned that students' attention must be focused on the task of finding the relationship between the two sets of information in the analogy if it is to be a successful strategy for increasing comprehension (Hayes & Tierney, 1982). For example, the analogy that uses the word *curtain* to explain *fog* will be understood only if students associate the characteristics of a blocked view with *curtain*. To check students' ability to focus on the appropriate characteristics of *curtain*, a teacher might ask, "How is a curtain like the fog?"

A long line of research has strengthened the case for presenting students with *oral previews* just before they read a selection. These previews, which attempt to relate the students' prior knowledge to the content of the selection as well as to provide them with specific information about that content, have been effective with students at various grade levels and with different types of texts; for example, with eleventh grade students of average ability who were assigned two short stories to read (Graves & Cooke, 1980), with low ability junior high students reading short stories (Graves, Cooke, & LaBerge, 1983), and more recently with eighth grade students reading social studies texts (Graves & Prenn, 1984). Typically, an oral preview consists of (1) an interest capturing section that bridges the gap between what the students know and what the text contains; (2) a discussion question to encourage students to speculate about the material to be read; (3) an informational section that provides the necessary background knowledge for understanding the text; and (4) directions that give students a purpose for reading.

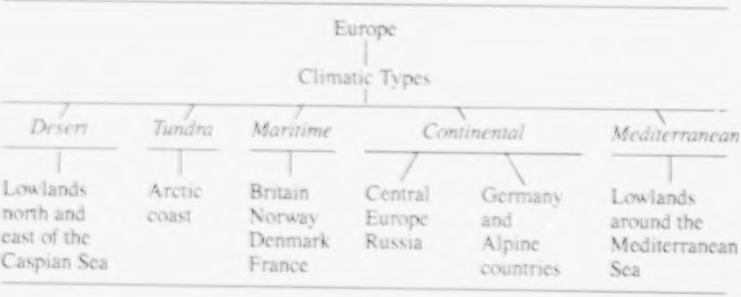
F8

Like the oral preview, the *thematic organizer* is a textbook learning aid that explicitly defines the central theme of a passage and relates the theme to the students' prior knowledge. It differs from the oral preview in that it sometimes provides cohesion among the text's implicit superordinate and subordinate ideas by means of a structured overview. Unlike the structured overview, however, the thematic organizer always contains a prose description of the theme of the passage. Using a thematic organizer, Risko and Alvarez (1986) reported enhanced literal and inferential comprehension for students of different ages and ability levels (good/poor readers), as well as transfer of learning for students at the elementary, secondary, and college levels (Alvarez, 1983).

High school social studies and science classes have served as the primary testing grounds for an intuitively appealing textbook learning aid known as the *structured overview* (Barron, 1969; Earle, 1969). (See Figure 1.)

The structured overview, or graphic organizer as it is sometimes called, is a visual representation of a selection's key concepts. A hierarchical ordering of those key concepts is thought to represent the text's logical structure. The structured overview helps students relate new content to concepts learned in the past. Although the research is mixed, students with high verbal ability generally benefit from using the structured overview more than do students in any other ability group (Moore & Readence, 1980).

**Figure 1**
**Example of a Structured Overview**


Europe
Climatic Types
Desert
Tundra
Maritime
Continental
Mediterranean
Lowlands north and east of the Caspian Sea
Arctic coast
Britain Norway Denmark France
Central Europe Russia
Germany and Alpine countries
Lowlands around the Mediterranean Sea

*Activation.* Asking questions is one approach teachers can use to help students selectively activate their background knowledge prior to reading. Although few of the studies we reviewed included only secondary school students as subjects, our conclusions are based on findings that emerged in numerous contexts with numerous age groups. There is general agreement in the research literature that answering questions affects reading comprehension in a positive manner. Students who read a passage and answer questions about it generally learn more than students who only read the passage (Hamilton, 1985; Klauer, 1984; Tierney & Cunningham, 1984).

Most reviews of written questions indicate that the placement of questions is a powerful factor in their impact on learning. In general, the studies indicate that prequestions – questions presented before reading – tend to improve students' learning of targeted information. To illustrate, a passage might briefly describe the events that led to the Civil War. Teachers who prepare their students for the passage by asking, "What was the fundamental cause of the Civil War?" or by directing "Read in order to be able to list the events leading to the Civil War" could expect their students to grasp the events as well as the fundamental cause better than students who received no prequestions or directions before reading.

It is important to know that the facilitative effect of prequestions is limited to the targeted information at the expense of incidental information. Students who received prequestions about the causes of the Civil War most likely would miss information relating to other concerns. Thus, only those teachers who wish to direct students to specific information should rely on prequestions.

Teachers who want students to gain an overall, general understanding of a passage should rely on postquestions – questions asked after reading. Like prequestions, postquestions seem to improve students' learning of information, although postquestions do not have as strong an impact on targeted information. The special value of postquestions is their impact on readers' grasp of incidental information not tapped specifically by any one question. This impact might be due to students attempting to learn everything possible in preparation for an upcoming assessment.

### *Elaborating and Organizing Strategies*

Students attempting to read their content area texts are often handicapped by a limited knowledge of the subject matter and a lack of an effective strategy for committing the material to long term memory in a form that is easily retrieved. If students are to be successful in reading their content area assignments, they need to develop expertise in using two learning strategies: elaboration and organization.

*Elaboration.* Elaboration is a three step strategy. Students first are taught to recognize when they need to remember something; then they are taught to check for a basic understanding of what it is they want to commit to memory; and finally, they are taught to engage in an action sequence to reach their goal of remembering the target information. This sequence of events (when, what, and how) was taught to a group of seventh grade students during regular school periods of 50 minutes each day for ten days (Gagne, 1985). A variety of reading passages (math, history, science, and literature texts; directions for the Heimlich maneuver; a Superman story) provided students with materials on which to practice the elaboration strategy. Students taught this method were compared to a control group on a posttest. Both groups were asked to study new material and were told to expect a test on the material later, but were not prompted to use the elaboration strategy. The students in the trained group performed significantly better than those in the control group. An important outcome of this research was evidence of transfer of learning (Gagne et al., 1984).

In general, the research suggests that readers who contribute prior knowledge to the information in the text increase their chances of remembering the textual material. The elaboration strategy helps the reader bridge the gap between the new (textual information) and the known (the reader's prior knowledge). Examples of several strategies known to be effective in helping students elaborate on text can be found in Chapter 12 of this book.

*Organization.* Organization, the other strategy that leads to effective encoding of information, includes summarizing skills. Brown and Day's five rules (1983) for summarizing are listed in order of increasing difficulty:

- delete trivia in a text;
- delete redundancies, or repetitions of the same idea;
- substitute a superordinate term for several subordinate ones;
- select the main idea; or
- invent the main idea if one is not present in the text.

Interesting findings regarding individual differences have surfaced during studies involving the summarization strategy. In one study, good and poor eighth grade readers exhibited marked differences in summarizing ability, even in their sensitivity to what was important in expository text adapted from tradebooks and social studies, science, and reading textbooks (Winograd, 1984). Poor readers chose as important information that which held high personal interest for them, but not the information the author had placed high in the text as a sign of its importance.

Variations on the summarization strategy continue to proliferate. An interesting research study by Bean and his colleagues (1983) modified Brown and Day's summarization rules to include these five steps.

- Selection: Locate a topic sentence that organizes all the ideas in this section of the chapter.
- Invention: If there is no clear topic sentence, invent and write your own.
- Generalization: Write a statement that organizes the ideas in this section. (This statement would incorporate the ideas expressed in the topic sentences stated in a more general way.)
- Questions: Write up to three questions based on the general statement.
- Conclusion and Evaluation: Write the position you support and, if possible, how you might test the truth of this position.

High school students enrolled in two sections of an honors world history class participated in the study. Consistent with several earlier studies, findings indicated that summarization training helped students synthesize expository text and present it in a brief and well-organized fashion. However, even with the addition of the questioning step, students trained in the summarization strategy did no better than the control group students on tests of comprehension and selection of key ideas. This fact could be attributed to the type of students who participated in the study. They were all honors students and could be expected already to have some fairly effective summarization strategies.

Mixed results as to the effectiveness of a strategy (such as summarizing) may depend on factors other than ability level. First, like so much of the educational research literature on strategy training, it is difficult to teach a strategy exactly the same way in a replication of the study. Second, as Graves, Prenn, and Slater (1985) pointed out, negative or positive findings from one study to another may be accounted for by the variation that occurs naturally from one grade level to the next. What may work for high school students may not work for seventh graders.

A growing number of researchers are testing the efficiency with which students at the early levels of secondary schooling can be taught to summarize content area materials. Taylor and Beach (1984, p. 139), for instance, developed a hierarchical summary strategy that they used in a study of seventh graders enrolled in a suburban junior high school. (See Figure 2.) Students in the Taylor and Beach study were taught how to produce a postreading hierarchical summary of their social studies assignments. Briefly, the summarization strategy consisted of these six steps:

- Students made a skeleton outline by drawing two lines at the top of a sheet of paper, which would serve later (step 6) as a place to record the key idea of the passage.
- For every section (designated by a subheading) in the passage they read, students listed a letter down the left side of their paper.
- After students had read each section and generated their own main idea statement for that section, they recorded the statement next to the appropriate letter.
- Then the students listed two or three supporting details under each main idea statement.
- Students generated their own topic headings, wrote the headings in the left margin of their paper, and then joined sentences that were on the same topic.

**Figure 2**
**An Example of a Hierarchical Summary for a Three Page Social Studies Text Segment Containing One Heading and Six Subheadings**

---

I. Johnson developed many programs to fight injustices and poverty. (Key idea)

---

A. *Lyndon Johnson became President of the U.S. after Kennedy was assassinated.*
Hard worker, tried to carry out some of Kennedy's programs.

Civil Rights

B. *Johnson fought for civil rights law.*
Purpose: To protect blacks from discrimination in hotels and restaurants; blacks had not been allowed in some hotels or restaurants in the South.

C. *Johnson persuaded Congress to pass a law ensuring all people the right to vote.*
Protected black people's right to vote; literacy tests now illegal.

Great Society Programs

D. *Johnson started a "war on poverty."*
Job training, education for poor people, plans for a "Great Society."

E. *Johnson persuaded Congress to develop a medicare program.*
For people at least 65 years old, hospital bills paid, doctor's bill paid in part.

F. *Johnson persuaded Congress to pass a law giving money to schools.*
Purpose: To improve education of children from poor families, one billion dollars in aid to schools.

---

- Finally, students generated the key idea for the whole passage and wrote that idea at the top of their paper.

Results of the study indicated that students who learned to produce hierarchical summaries over a seven week period (one hour per week) recalled unfamiliar but not familiar social studies material better than the control group. The group having hierarchical summaries also performed better than the group involved in conventional question and answering tasks. Further, hierarchical summary training had a positive effect on the students' expository writing.

### *Knowing When and How to Apply Strategies*

The teacher's role in helping a student learn how and when to apply a particular strategy cannot be overemphasized. Drawing on their own experiences and on the research of others (Brown, 1980; Dansereau, 1978) Vaughan and Estes (1986, pp. 151-152) developed the following suggestions for teachers:

- Teach students strategies for learning from text in meaningful context. As Herber (1978) and others have noted, strategies taught outside the content area in which they are to be used do not transfer. Students need to be shown that the strategy they are learning has direct application to the course in which they are enrolled, and, more specifically, to the material they are required to read in that course.
- Model or demonstrate for students how you, the teacher, would use certain strategies. Sometimes this modeling may take the form of reading orally from a passage that you then go on to paraphrase. As you paraphrase the information, explain why you are leaving out some information, substituting a common term for a more esoteric term, or merely incorporating large chunks of information under one superordinate descriptor. In sum, make public your thinking about the strategy you are modeling.
- Encourage students to expand their repertoire of learning strategies by showing them how to add new strategies to old. For example, if they already know how to distinguish information that is important from that which is unimportant, show them how they have the foundation for learning to paraphrase. Or demonstrate how making decisions about what will or will not be read in a text forms the basis for learning about comprehension monitoring strategies.
- Provide students with opportunities for feedback as they practice newly learned strategies. Pairing students for learning activities can provide students with safe settings in which they can explain to a peer what strategy they learned, as well as how they went about learning it. Fader et al. (1976), in fact, built their highly successful writing instruction program around feedback given by groups of three students working together. These heterogeneously grouped triads were responsible for approving each member's written work before it was turned in to the teacher.
- Evaluate students in a manner that reflects your concern for what they understood, not what they merely remembered. Ultimately, this means relying less on closed book, recall types of tests and more on tests that ask students to make connections between concepts they have learned. Students need to know that the strategies they have learned will contribute to their improved perform-

ance on tests that ask them to clarify, elaborate, and apply what they have read.

Direct instruction and modeling are two other means for developing in students the ability to know when and how to apply strategies for learning from text. By direct instruction, we mean the domain of instructional behaviors usually associated with the whole class, teacher centered orientation described by Brophy and Good (1986) in their review of the research on teacher behavior and student achievement. Direct instructional behaviors are aimed at promoting on task student behaviors. For example, teachers who want to help students learn how to attend to an author's signaling of text structure might inform their classes about the need to look for an alternative point of view when *however, but*, or *on the other hand* appear in a passage. Instructing students to be alert for such verbal signals would serve to focus their attention and keep them on task.

Modeling involves thinking aloud while demonstrating the "how to" aspect of strategy teaching. A small but growing body of research suggests that thinking aloud is a valuable technique to use in helping students identify and use certain comprehension strategies (Bereiter & Bird, 1985). Thinking aloud is an attempt to let students "in" (so to speak) on the covert mental processes a teacher may go through in applying a particular strategy to a particular text. For example, a physics teacher interested in teaching the structure strategy (see Chapter 4) might skim a portion of an assigned chapter on Newtonian mechanics and make these oral comments: "Hmmm, I see the author has contrasted Newton's theory of motion with the impetus theory. I must remember to pay close attention to the differences in those two theories when I get to that part of the chapter. I'll try to look for any verbal signals the author gives. I'll also look for relationships that exist between the two theories, particularly those relationships that embody smaller bits of information."

## Summary

Focusing attention on relevant material prior to reading is thought to create expectancies within the learner. Attention focusing strategies that enrich or activate students' prior knowledge include using analogies, oral previews, thematic organizers, and structured overviews. Each is known to vary somewhat in its effectiveness, depending upon the learner, the text, and the setting.

Committing information to long term memory in a form that is easily retrieved is essential to content learning. Two strategies for aiding students in this type of learning are elaboration and organization. Elaboration involves the learner in a three step process: recognizing a need for remembering something, checking for a basic understanding of what is to be remembered, and engaging in an action sequence for remembering the target information. Organization includes primarily summarizing skills.

Direct instruction is one way of helping students learn when and how to apply a strategy effectively. Knowing when and how to apply strategies also can be modeled by the teacher. Modeling for students what they are expected to be able to do when they read their content area textbooks places the instruction of learning strategies in a relevant context – the content area classroom. Modeling provides students with an explanation of why a strategy is useful and how it works.

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# 6

David W. Moore

# Vocabulary

## What is the relationship between vocabulary and reading comprehension?

Comprehension of individual words is strongly related to comprehension of passages. This logical relationship is supported by research. For example, correlations between vocabulary test scores and passage comprehension test scores for U.S. high school students generally fall in the 60s (Anderson & Freebody, 1981). Correlation coefficients of this magnitude are considered to be substantial. In studies of passage readability, measures of word difficulty consistently have been found to predict passage difficulty (Klare, 1984). There is little doubt that readers who do well with individual words also tend to do well with passages.

This chapter begins with an examination of the relationship between understanding individual words and understanding passages. Next, it presents research based information about teaching vocabulary. Information is presented about which words to teach, the impact of teaching the vocabulary of a passage on subsequent comprehension of that passage, and four methods of teaching vocabulary: semantic categories, passage contexts, imagery, and morphemics.

### *The Relationship between Vocabulary and Reading Comprehension*

Anderson and Freebody (1981) describe three views of why vocabulary is so strongly related to comprehension. One view, the *instrumentalist position*, contends that understanding words enables readers to understand passages. Knowing the individual words of a passage is thought to be prerequisite for knowing what all the words add up to. Educators who teach students the new words from a passage before having students read the passage follow a practice that is consistent with the instrumentalist position.

A second view, called the *aptitude position*, hypothesizes that general verbal talent underlies both word and passage understanding. Mental agility is thought to affect students' capacities to acquire vocabularies as well as to comprehend passages. Students with quick minds when dealing with verbal information do well with vocabulary as well as with passages. Teaching practices that focus on developing students' strategies for making sense of language are in line with this aptitude position.

In the third view, *general knowledge* is stressed as the common feature underlying word and text comprehension. The contention of the knowledge position is that what readers already know about the world affects their abilities to assimilate the meanings of words as well as passages. Readers with deep and broad understandings of the world have the background to know to what their textbook passages are referring. Readers' backgrounds of information, organized in schemata, are brought into play when meaning is assigned to verbal information. Biology teachers who present new vocabulary in an organized, meaningful framework – such as presenting the features of crustaceans, myriapods, arachnids, and insects when introducing a unit on anthropods – follow a teaching practice consistent with the knowledge position.

Each one of the three views about the strong relationship between vocabulary and comprehension probably is correct, at least to some extent. The instrumentalist, aptitude, and knowledge positions shed light on why students who understand individual words also tend to understand passages. However, none of the positions is thought to exclude the others; none of the three is fully supported by research as the single explanation of the relationship between vocabulary and comprehension. Thus, a program of vocabulary instruction that includes the instrumentalist, aptitude, and knowledge positions seems appropriate.

## What does research show is the best way to teach vocabulary?

Determining which words students should be taught should be decided before describing how to teach the words. After all, the number of words in printed school English is estimated to be about 88,500 (Nagy & Anderson, 1984). Teachers need to be selective because they cannot present all the English words to their students.

*Approaches to Selecting Words to Be Taught*

Two approaches, isolated and functional, are available for determining which words to teach students (Herber, 1978). The isolated approach consists of locating lists of randomly arranged words deemed appropriate for particular grade levels. The lists typically are presented word by word, with each word's pronunciation and definition. This approach is isolated because the words are not connected by topic or by spelling pattern. The functional approach consists of identifying words important to units of subject matter and then presenting the words as the units come up during the school year.

Although the isolated approach is easily managed, its effectiveness has been criticized (Jenkins, Stein, & Wysocki, 1984). The functional approach generally is recommended by secondary reading methods texts because terms are tied together meaningfully. Another case for the functional approach is that many words assume different meanings in the different subjects, and content area teachers are more likely to emphasize the word meanings particular to their area (Carroll, 1964). For example, the words in the following list of relatively common terms are defined one way in mathematics, another in science, and still another in social studies:

root
table
satellite
dividend
plain
plot

Assuming that a functional approach is employed and students are taught new vocabulary when the words occur during units of study, several issues remain.

### *Vocabulary Instruction and Passage Comprehension*

The instrumentalist position on the relationship between vocabulary and passage comprehension emphasizes the role of understanding the individual words contained in passages. Those who accept this position advocate teaching students the meanings of key words before these words are encountered in text. Teaching the vocabulary of a passage before reading is a standard recommendation in directed reading activities, although the prevalence of this practice in secondary school classrooms is not known.

Teaching the key vocabulary of a passage in preparation for students' reading of that passage seems to be a logical practice. However, the research support for this practice is mixed (Calfee & Drum, 1986; Mezynski, 1983; Tierney & Cunningham, 1984). Less than clear-cut support for this practice with high school students also comes from the fact that few studies have included subjects from this age group.

At present, two conclusions about the impact of teaching vocabulary on high school students' subsequent reading comprehension appear warranted. First, the effect of teaching vocabulary depends on the value of knowing the words. Some words are relatively unimportant and can be skimmed over with little loss of comprehension. For instance, a narrative passage might mention that a minor character wore a *taupe* shirt. If this characteristic had no bearing on the story, then readers could safely ignore it. On the other hand, if the story were a mystery and the color of the character's shirt were an important clue, then readers might need to know the meaning of *taupe*. Along with relative importance, contextual setting helps determine the value of teaching certain words before having students read a passage. Teaching *taupe* would not be necessary if the passage contained sufficient context to reveal its meaning (The suspect's shirt was taupe, a brownish gray color). Finally, the expected level of understanding of a passage determines the value of knowing the meanings of certain words. If rote recall questions are presented, students simply repeat words for which they have no meaning (e.g., "What color was the suspect's shirt?" "Taupe."). If higher level questions are asked (e.g., "What does the suspect's shirt color reveal about his personality?"), then students might need greater understanding of specific word meanings.

A second conclusion about teaching vocabulary is that its impact depends on how well students learn the words (Vaughan et al., 1982). Students need to understand meanings of words that accurately fit particular passages, and they require automatic access to those meanings. That is, students need to be able to apply correct word meanings in given contexts. For instance, readers need to know the technical, mathematical meanings of *cube* and *root* in order to make sense of the directive, "Obtain the cube root of 27." Students also need to be able to apply the meanings effortlessly. Readers who interrupt their processing in order to assign meaning to unfamiliar words have difficulty concentrating on the overall meaning of a passage.

Thus, teaching the vocabulary of a passage before reading will probably affect comprehension of that passage if the words are important, if they are not defined by their context, and if knowing their meanings contributes directly to performance on later tasks. Also, students require automatic understandings of appropriate words in order to comprehend a passage. The next section presents research based recommendations for teaching words to students.

### *Methods of Teaching Vocabulary*

Before presenting methods of teaching vocabulary, it is important to repeat that readers with enriched backgrounds of information tend to do well on both vocabulary and comprehension tasks because they have the necessary concepts to draw from during verbal tasks. Readers who already know a lot about plants, for example, have an advantage when reading about them. Teaching students concepts deserves attention as well as teaching students names for the concepts. Developing concepts is a complex task and one that has received much research attention (Medin & Smith, 1984; Tennyson & Cocchiarella, 1986).

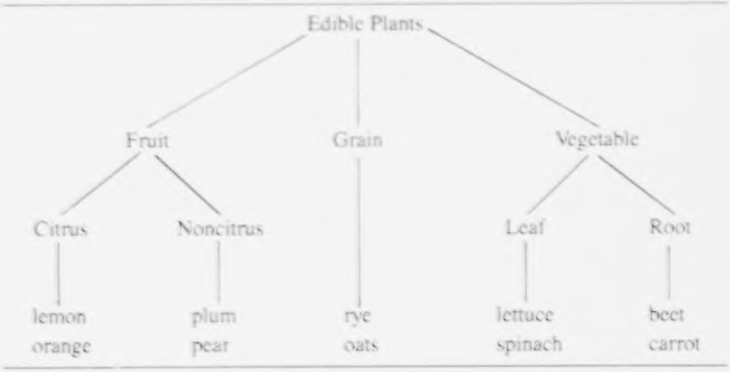
Numerous suggestions are available for vocabulary development (Dale, O'Rourke, & Bamman, 1971; Johnson, 1986; Johnson & Pearson, 1984). In this section, we present four approaches, well supported by research, for developing high school students' vocabularies. The approaches are based on semantic categories, passage contexts, imagery, and morphemics.

*Semantic categories.* A common way mature readers remember vocabulary terms is by relating them to other words; that is, readers form semantic networks, or categories (Chall & Stahl, 1982; Graves, 1986). Mature readers categorize words along many dimensions as they strive to create integrated sets of knowledge. For instance, the word *boat* might be associated with its functions (traveling, skiing, fishing), its types (sailboat, hydrofoil, naval destroyer), its components (hull, propeller, beam), its coordinate concepts (car, train, airplane), and its superordinate concepts (vessel, craft). Studying information with the help of graphic organizers and analogies promotes the creation of semantic categories and seems to be effective under certain circumstances.

- Graphic organizers. Graphic organizing is a research based teaching practice grounded in the creation of semantic categories. Graphic organizers, originally called structured overviews, portray relationships among terms in the form of hierarchical tree diagrams. They differ from traditional outlines because terms are not arranged according to their order of presentation and the forms of the diagrams are not governed by tradition. They differ from webs and matrices because these latter two structures are not organized hierarchically (Calfee & Drum, 1986). The Figure is an example of a graphic organizer for edible plant terms.

Moore and Readence (1984) reviewed the research on graphic organizers and presented several conclusions. First, graphic organizers affect vocabulary test scores to a moderate degree. Second, learners' maturity might influence the effectiveness of graphic organizers: University students seem to benefit substantially from graphic organizers, whereas elementary and secondary students obtain smaller effects. Third, students who produce graphic organizers following the presentation of content do better than those who only interact with graphic organizers before the content is presented. A possible explanation is that students were actively involved with the construction of the graphic organizers. For instance,

**Graphic Organizer**



the involvement consisted of students freely grouping words written on index cards and filling words into prepared tree diagrams that included superordinate terms. This involvement seemed to produce active, organized thinking about word meanings.

A fourth conclusion about graphic organizers was that teachers who led students through graphic organizing perceived themselves to be better prepared and more confident than usual. Teachers who used graphic organizers liked having a map of the course content they were presenting. Finally, little was known about how graphic organizing fit the daily routines of secondary schooling. Inserting graphic organizers into the instructional repertoire of teachers calls for change, and teachers' reactions to this particular change were not documented.

In brief, graphic organizing is a teaching practice based on semantic categories that holds promise as a way to increase students' vocabularies. Graphic organizers that are produced after content is presented seem to especially benefit mature students.

- Analogies. Analogies are a type of semantic category that appear to substantially affect high school readers' learning from text (Bean, Singer, & Cowan, 1985; Hayes & Tierney, 1982). Analogies differ from graphic organizers because analogies explicitly compare similar concepts, whereas graphic organizers diagram a network of relationships. For instance, in analogies, an airplane propeller's forward movement caused by its biting into the air might be compared to a screw's forward movement caused by its biting into wood; the game of cricket might be compared to baseball; and the interdependence of cells in the human body might be compared to the interdependence of people in a society. For a good presentation of various types of analogies and a summary of their prevalence in science textbooks at various grade levels, see Curtis and Reigeluth (1984).

To present vocabulary through analogies, teachers first think of something students know that is similar to the word to be learned. The old term used to teach the new one must be familiar to students for the analogy to be effective (Baldwin, Luce, & Readence, 1982). Telling students that the rules of cricket are quite similar to the rules of rounders is not helpful if the students don't know rounders either. Once a familiar term is matched with an unfamiliar one, explicitly point out how the two concepts are alike and not alike.

*Passage contexts.* Along with semantic categories, mature readers use contextual knowledge to understand and remember the meanings of words (Chall & Stahl, 1982; Graves, 1986). Passage contexts consist of the words that surround the target word. Mature readers always use context to some degree because it allows fluency by enabling them to predict and verify upcoming words. In addition, context determines the meanings of words. The appropriate meaning of a multiple meaning word like *spring* can be inferred only by noting its context. This value of context is difficult to overestimate because all meaning depends on the situations in which events occur (Mishler, 1979). Teaching practices that develop readers' attention to passage contexts seem to be effective for vocabulary development when certain conditions are met.

Fluency is one condition readers need in order to use context as an aid for vocabulary development. Readers need to make automatic use of basic reading processes in order to use context as an aid for determining the meanings of unfamiliar words (Johnson & Baumann, 1984; Vernon, 1977). Students who read word by word because they have limited strategies or because their texts are too difficult generally are unable to attend to the meanings conveyed by the sentences, paragraphs, and longer units of discourse. Nonfluent readers have little mental capacity left for using context to learn the meanings of unfamiliar words.

Time spent reading affects students' ability to learn words through context. Nagy, Herman, and Anderson (1985) reported a study that provided some empirical support for providing readers time to read as an aid to vocabulary. Their study is noteworthy because it examined secondary school students and it employed normal textbook passages. An important feature of the study was that the subjects knew they would be tested on the reading material, so they probably read the passages quite carefully. Nagy, Herman, and Anderson determined that eighth grade students of average and above average reading ability acquired meanings of some unfamiliar words during one reading of selected passages. This study provided limited support for educators' assertions that careful reading pays off in improved vocabulary. We emphasize this study's findings—that time spent reading slightly improved good readers' vocabularies—because reading time is scarce both inside and outside secondary schools.

Having listed some general conditions needed for readers' vocabularies to benefit from the use of context, it is important to list some qualifications about context. First, the value of context depends on the experience of readers and the information that is provided (Schatz, 1984). For instance, "Bouillabaisse is a seafood goulash" is a sentence that suggests the meaning of *bouillabaisse* only for readers who already know the meaning of *goulash*. Readers who have eaten bouillabaisse but didn't know what it was called will benefit from this sentence more than those who have not experienced the dish. Readers who have the concept for an unfamiliar term but not its label benefit the most from context.

Second, vocabulary development through attention to context is a gradual matter. Years ago, Deighton (1959) pointed out the need for frequent contacts with an unfamiliar word in order to learn all its meanings. Terms such as *cube* and *root* require numerous contexts for all their meanings to be revealed. In addition, one contact with an unfamiliar word might produce only partial knowledge of one meaning of the word. Nagy, Herman, and Anderson (1985) reported that learning word meanings from context took place, but their measures of learning included three levels of knowledge ranging from minimal to complete. The point is that readers might know a word, but only partially, after encountering it in one context.

A third qualification about the use of context is that the relative values of particular contextual forms are not clear. Researchers such as Ames (1966), Quealy (1969), and Sternberg, Powell, and Kaye (1983) have suggested specific types of context cues such as direct explanation, comparison and contrast, enablement, and class. Others suggest that pictorial and graphic aids (charts, graphs, footnotes) be considered context cues. However, the relative informational value of these types of context cues for secondary students has received little research attention. For example, Carroll and Drum (1983) reported that high school students benefited the most from context that explicitly provided the meanings of words. Contexts such as "Seamen suffered regularly from scurvy, a terrible disease caused by lack of vitamin C, that sometimes carried off whole crews" were found to improve vocabularies more than contexts such as "Seaman suffered regularly from scurvy that sometimes carried off whole crews" (p. 158). At present, the following rule given to middle school students for using context in one study seems most appropriate: "When there's a hard word in the sentence, look for other words that tell you more about that word" (Carnine, Kameenui, & Coyle, 1984, p. 198).

In brief, high school readers can benefit from encountering unfamiliar words in context; however, several qualifications should be observed. Time spent fluently reading a passage in preparation for a task seems to produce vocabulary growth. The value of context is limited when readers are unable to relate to the available cues. In addition, learning words through context is a gradual process that seems to require exposure to many cues about the meanings of particular words.

*Imagery*. Visualizing the concepts represented by words has been demonstrated to be a useful device for understanding and remembering word meanings (Paivio, 1971; Parrish & Cook, 1983). Imagery takes many forms, and visual imagery is only one type, but visual imagery has received the most attention. Some vocabulary terms that represent concrete objects (Joseph Stalin, Taj Mahal, barbed wire) are easily pictured mentally while terms that represent abstract concepts require more complex processing. For instance, visualizing the vapor coming off dry ice might be used to represent the science term *sublimation;* thinking of the moisture that forms on cold iced tea glasses during the summer might be used to represent *condensation;* and recalling a freeway noticeably close to a farm house might stand for *eminent domain.*

A specialized use of mental imagery for vocabulary development that has received a great deal of research attention is the keyword method (Pressley, Levin, and Miller, 1981; Pressley, Levin, and Delaney, 1982). The keyword method is a two step procedure. First, analyze an unfamiliar word (*poteen*, which is Irish whiskey) and identify the part of it that sounds like a familiar word (*pot*). Then visualize a connection between the meaning of the unfamiliar word and the familiar word part (e.g., imagine a bottle of Irish whiskey inside a pot). When introducing students to this method, pictures are helpful so that clear examples of the connecting images can be displayed. The use of pictures can be gradually faded out so that the students generate their own images.

Studies have demonstrated that the keyword method establishes a strong connection between unfamiliar words and their meanings. However, its applicability to subject matter terms encountered daily in high school remains to be seen. This method is rather cumbersome and artificial. At least the keyword method research has been useful for focusing educators' attention on devices for vocabulary growth beyond semantic categories and passage contexts to mnemonics such as visual imagery.

*Morphemics.* An often recommended vocabulary development practice is to have students attend to prefixes, bases, suffixes, and the parts of compound words. Readers who discern these morphemes in unfamiliar words are thought to have an advantage in understanding and remembering word meanings. The longest word in English, *pneumonoultramicroscopicsilicovolcanoconiosis*, the name of a lung disease caused by the inhalation of very fine silicate dust, is a striking example of a long word that can be learned by applying morphemic analysis. Indeed, morphemic analysis frequently seems to act as a mnemonic device for new words. Although some students might have difficulty applying morphemic analysis to unfamiliar words, these same students might understand and retain the meaning of individual words when their morphemic structure is highlighted (Otterman, 1955). Highlighting the morphemes in the 45 letter word above might help students learn that word.

Research into the effects of teaching students morphemic analysis is minimal (Graves & Hammond, 1980; Johnson & Baumann, 1984). In fact, the most compelling case for teaching students morphemic analysis is presented by those who study English word formation rather than education (Aronoff, 1983; Chomsky & Halle, 1968; Venezky, 1970). Linguistic analyses have established the fact that numerous words in English are based on common morphemes. Furthermore, the analyses point out that morphemes tend to be spelled the same, even though their pronunciation might change substantially. This characteristic is illustrated by word pairs such as *sign/signal* and *metal/metallic*. As can be seen, one morpheme underlies each word pair, but the pronunciation of each morpheme changes even though its spelling remains constant. Given this role of morphology in English, teaching students to discern morphemes seems reasonable. The following recommendations for teaching morphemic analysis to high school students also seem reasonable, although they are prime candidates for further investigation:

- Emphasize base words in semantic word families (Chomsky, 1970). For instance, in English literature, the terms *drama*, *dramatic*, *dramatist*, *dramatize*, and *dramatization* might be presented when that concept first occurs. In science, the terms *humid*, *humidity*, *humidify*, and *dehumidify* might be presented.
- Teach only morphemes that are productive (Shepherd, 1975). For instance, knowing the meaning of *ceive* is not strongly related to knowing words that contain that root, such as *receive* and *conceive*. Similarly, the prefixes *ab* and *ad* seldom reveal the meanings of words.

## Summary

High school teachers are unable to teach students all the words they will need throughout their lives. Adults require word analysis techniques that enable them to figure out words on their own. The key here is the use of strategies. Readers need self-initiated, flexible control of strategies for determining the meanings of unfamiliar words. Teaching students word meanings certainly is important, but teaching students how to learn words on their own also deserves attention.

Teaching students independent strategies is an area that is just beginning to appear in vocabulary research. Calfee and Drum (1986) report that some training studies have been successful in teaching limited sets of strategies (e.g., applying knowledge of eight prefixes to words), but research based suggestions are few. A general suggestion is based on models of direct instruction. That is, teachers should first demonstrate and discuss the vocabulary strategy they want their students to perform. Teachers who think aloud as they perform the strategy present a model for their students to follow. Such teacher modeling is like a slow motion film of the actual process. After demonstrating and discussing a vocabulary strategy, students perform it under gradually decreasing teacher direction and feedback.

Teachers might begin their instruction in developing students' independence by pointing out that they have been leading students through ways to learn words, but it is now time for students to lead themselves. For instance, if teachers have been leading students through graphic organizing, then the question might be asked, "How do we go about graphically organizing a passage?" Responsibility for selecting and diagraming the words is gradually shifted to the students until they can independently produce their own graphic organizers. The following vocabulary strategies, presented in this chapter, might be shifted to students' responsibility:

- determining the words in a passage that need to be known in order to understand the passage,
- forming semantic categories such as graphic organizers and analogies,

- locating passages that allow fluent reading in order to learn new vocabulary,
- allocating time to read passages containing new vocabulary,
- focusing on contextual cues that define unfamiliar words,
- visualizing concepts represented by words, and
- applying morphemic analysis to unfamiliar words when possible.

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# 7

David Holdzkom

# Readability

### What is the "average" reading level of a twelfth grade student?

For the most part, teachers in secondary schools are not present when students read texts. Goodlad (1984) reports that the teachers and students his team observed devoted less than 5 percent of their class time to reading. Students use their textbooks outside the classroom, reading and studying texts largely without teacher assistance. Matching students to texts to ensure that the books are useful to and used by students is a critical activity for teachers. In perfecting this match of students to text, three things need to be considered: the range of the reading ability among students, the readability level of texts, and structural features of text that facilitate or improve the students' processing of the information in the book.

Teachers have long observed that many students in the same class appear to read below or above grade level. Sometimes, teachers who have been frustrated by assigning text readings that prove too difficult for students wonder what these students were taught in their elementary reading classes. Actually, American elementary school teachers are successfully teaching students to read (Nelson & Herber, 1982). However, it is unreasonable to expect that the reading skills acquired in elementary school will be sufficient to enable students to perform secondary school work. Materials used in elementary school reading instruction, for the most part, consist of general vocabulary, concepts for which children have some background of experience, and fairly simple sentence forms. Secondary school students, on the other hand, need to acquire strategies for dealing with increased technical vocabulary, concepts that are not a part of their background knowledge, and complex linguistic structures.

Within any group of students, a range of reading achievement naturally exists, reflecting individual differences. Singer and Donlan (1985) point out that the expected reading levels of a class of students with average IQs fall within a range that is equal to two-thirds of the average chronological age (CA) of the group. If the average age of a group of high school seniors is 18, then the expected range of reading achievement is 12 years. For the expected reading *age* range, half the range is subtracted from and half is added to the chronological age (an age range from 12 years to 24 years for a chronological age of 18).

Expected reading range = $2/3 \times \overline{CA}$
= $2/3 \times 18$
= $2 \times 6$
= 12
Expected reading age range = $(18 - 6)$ to $(18 + 6)$
= 12 years to 24 years
Expected *grade level* range = sixth grade to graduate school

At any grade level, the reading age or grade level range increases each year. Even if teachers select a text with a readability score appropriate for the grade level, some students in the class will find the text too difficult, while others will find it too easy. The range, of course, decreases if students are grouped homogeneously by reading ability.

## What is readability? How can I determine it?

Readability refers to the ease of understanding of a text chiefly because of features of writing style. From our own experience, we know that very long sentences or sentences with a high proportion of difficult words are more difficult to understand than sentences with fewer words or easy words. Also, we know that sentences with complex subordinate clauses can be difficult to understand because of the complex relationships among the ideas. Generally speaking, readability formulas have been based on two variables: sentence length and complexity of words. These variables can be easily recognized by most people and can be quantified. When these variables are fed into a formula, a grade level can be assigned to a given book or text.

However, readability formulas are at best only a rough indicator of how students will respond to a text. Readability formulas fail to consider many of the factors that make up a student's learning potential, including prior knowledge, motivation, and reading skill level. In addition, readability formulas ignore the influence of other text factors, such as text structure and the degree of coherence within and between sentences (Davison, 1984).

### *Readability Formulas*

The earliest readability formulas (many of which are still widely used) were based on Thorndike's frequency count of word use. By analyzing the number of times a particular word appeared in print, Thorndike was able to determine the relative familiarity or frequency of words. Based on this work, other people developed readability formulas (Klare, 1963).

Although different combinations and equations have been developed, they take into account only the number of words in a sentence and the length of the words. No consideration is given to the difficulty of the concept behind the word (hexus vs. hippopotamus) or to the structure of the sentence (simple vs. complex).

Some developers have tried to reduce the burden of the process, since a formula is unlikely to be used if it cannot be used easily, while retaining the high correlation with reading scores. Optic scanning equipment and computers have reduced the tedium and potential for error that made formulas developed earlier in this century difficult to use.

One formula that is widely used will be presented here in some detail. The Fry Readability Graph focuses on two aspects of text: sentence length and word length, or the number of syllables per hundred words (Fry, 1977). To use Fry's formula for estimating the readability of the passage below, follow the directions under the graph.

Use this passage for practice:*

> Teachers who decide to use the process approach to writing instruction in their classroom will find several things happening. Children will spend more time talking with one another and with the teacher. The teacher's ability to diagnose the needs of individual children and to guide their development will be strengthened. Children will also spend more time writing. They will be more highly motivated to write, not just in the language arts, but in all of the subject areas and during the hours that they spend away from the classroom. Finally, the level of trust between the children and the teacher/will increase, because the teacher's role as editor will take precedence over the teacher's role as evaluator.

**Research Within Reach: Oral and Written Communication.* D. Holdzkom, L.J. Reed, D.L. Rubin, and E.J. Porter. CEMREL, 1982.

Number of words 100 (to the slash mark)

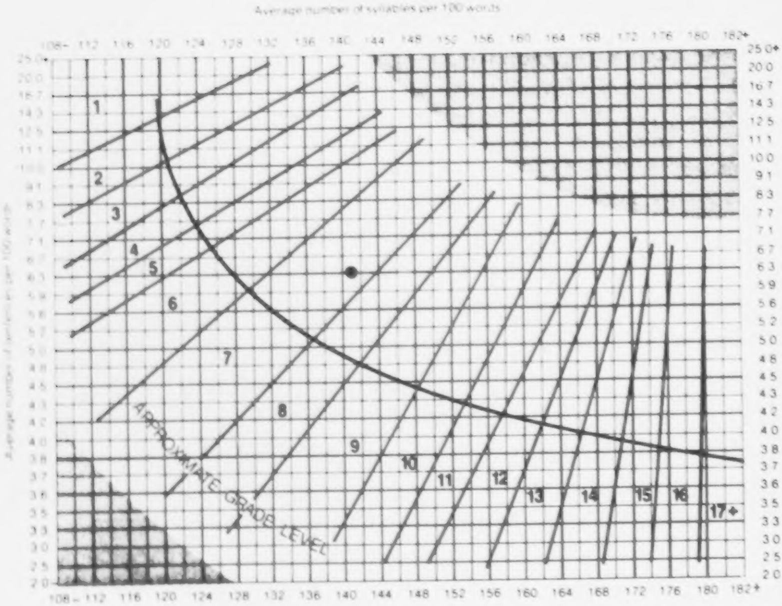
Number of sentences 5.4

Average words per sentence 18.5 (sentence length)

Number of syllables 152 (word length)

The point where the two lines intersect falls within the ninth grade level.

Typically, readability formulas of the computational type have two uses. They can be used to determine the readability of a given text and thus *predict* the ease with which a reader can handle the text. Klare (1984) points out that prediction research has primarily a psychometric orientation and that, since the appearance of the first readability formula, correlations in the low .90s have been reported. Textbook publishers routinely publicize the readability levels of their books, expressed as grade levels. However, this practice



## Graph for Estimating Readability – Extended

Expanded directions for working readability graph

1. Randomly select three (3) sample passages and count out exactly 100 words each, beginning with the beginning of a sentence. Do count proper nouns, initializations, and numerals.
2. Count the number of sentences in the 100 words, estimating length of the fraction of the last sentence to the nearest one-tenth.
3. Count the total number of syllables in the 100 word passage. If you don't have a hand counter available, an easy way is to simply put a mark above every syllable over one in each word, then when you get to the end of the passage, count the number of marks and add 100. Small calculators can be used as counters by pushing numeral 1, then pushing the + sign for each word or syllable when counting.
4. Enter graph with *average* sentence length and *average* number of syllables; plot dot where the two lines intersect. Area where dot is plotted will give you the approximate grade level.
5. If a great deal of variability is found in syllable count or sentence count, putting more samples into the average is desirable.

6. A word is defined as a group of symbols with a space on either side; thus, *Joe*, *IRA*, *1945*, and *&* are each one word.
7. A syllable is defined as a phonetic syllable. Generally, there are as many syllables as vowel sounds. For example, *stopped* is one syllable and *wanted* is two syllables. When counting syllables for numerals and initializations, count one syllable for each symbol. For example, *1945* is four syllables, *IRA* is three syllables, and *&* is one syllable.

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Source: Edward Fry, "Fry's readability graph: Clarifications, validity, and extension to level 17," *Journal of Reading*, 1977, *21*, 242-252. Reproduction permitted – no copyright.

raises a problem in interpretation, because *grade level* is not an absolute term. Chall, Conrad, and Harris (1977) have demonstrated that the reading level of texts has consistently declined over the years and that there has been a corresponding decline in Scholastic Aptitude Test (SAT) scores. Moreover, when various readability formulas are applied to the same passage, they may have different results. Different formulas do not always assign the same rating to the variables of word or sentence difficulty.

Efforts have been made to help text authors write at specific levels of difficulty, especially when they are writing textbooks for specific grade levels. When readability formulas are used for production purposes – to guide writers – other problems surface. For example, reducing the number of words per sentence by separating clauses with periods rather than by conjunctions results in a lower readability score. However, conjunctions often serve to clarify relationships between clauses; their deletion may require higher levels of reasoning. For example:

> Similarly, the story of Pandora appeals to us because it gives an ingenious explanation for the presence of evils and diseases on earth, and because the figure of Pandora herself, despite the troubles she brought, is an attractive one.*
>
> *Similarly, the story of Pandora appeals to us. It gives an ingenious explanation for the presence of evils and diseases on earth. Also, the figure of Pandora is an attractive one, even though she brought troubles to earth.*

**Myths and Their Meaning*, Max J. Herzberg, Allyn & Bacon, 1984, 20.

The changes can sometimes increase difficulty of understanding even though, on a formula basis, the readability level has been decreased. Reducing sentence length is often used to dilute literary classics for younger readers. While rewriting for improved clarity is sometimes desirable, editing merely to reduce sentence length often creates as many problems as it solves.

*Alternative Procedures*

Bearing in mind Singer and Donlan's formula (1985) for estimating the expected reading age range of any group, it is clear that simple reference to a grade level number is not sufficient for selecting the most appropriate texts. Moreover, only a limited number of teachers participate in textbook selection. The course text may be adopted by a school district committee, or it may be chosen by department chairs. In any case, the text is chosen without specific knowledge of the ability of the students who will use it. Sometimes several texts, at various reading levels, are available; often a single text must be used by all students in a given class. No matter what, the teacher will need to determine the ability of students to use the text or texts available. There are procedures teachers can apply in classrooms to estimate the difficulty of text for individual students.

The use of cloze procedures has been studied as an alternative to traditional readability formulas (Bormuth, 1975). In a cloze procedure, the first and last sentences are left intact, and words are deleted from a passage at regular intervals (e.g., every fifth word might be deleted).

> Bobby and Willy are good friends. Bobby loves to play __________ but has never been __________ to hit the ball. __________ sense of frustration is __________ when the other boys __________ him about his record __________ strikeouts. His friend Willy __________ him some techniques and __________ him to work hard __________ keep practicing. Now Bobby is improving in his ability to hit the ball.

The student fills in the blanks with words that fit the context. Examining the student's responses enables the teacher to identify students for whom the text is too difficult, too easy, or about right. This procedure has several benefits. First, it allows the teacher to select supplementary materials at the appropriate level of difficulty for students; second, it alerts teachers to differences among students; and third, it allows the teacher to decide how much reliance can be placed on the text or other materials as conveyors of information.

Specifically, this procedure involves the following steps.

1. Select textbooks at several grade levels from your content area. Take a passage of about 125 words from each book. Leaving the first and last sentences of each passage intact, delete every fifth word and replace each with blanks of uniform length.
2. Ask students to read the passages in order of difficulty, beginning with the easiest text. Ask them to insert the correct word in each blank. Count as correct only those words that are exact replacements (excluding spelling) of the words in the original text.
3. Using this formula, determine the percentage correct score:

$$\text{Percent Correct} = \frac{\text{Words Correct}}{\text{Total Number of Blanks}} \times 100$$

4. For ease of scoring, an answer sheet can be used with numbered spaces that correspond to the blanks.

Generally, a score between 40 and 60 percent correct indicates the student can read the text at the *instructional level;* the student can use the text with the help of the teacher. A score below 40 percent indicates that the text is at the *frustration level;* it is too difficult. A score above 60 percent indicates that the text is at the *independent level;* it can be used without assistance.

The cloze procedure results also indicate the range of reading ability in the class. Using this information, the teacher can select and assign supplementary reading materials at the appropriate level of difficulty for each student. Many school libraries have reference books that list and annotate textbooks, supplementary instructional materials, and other print resources. The annotations include readability levels that can help teachers make appropriate selections for students when the assigned text is too easy or too difficult.

Two words of caution are important. First, remember Goodlad's observation (1984) that in classes he studied less than 5 percent of class time was devoted to reading. If reading—either orally or silently—is expected to be an independent task for students, care must be taken to select books that students can read independently. Second, cloze techniques work best when the passage is near the student's reading level. Often, very good readers choose synonyms for the correct word when filling in the blanks. These synonyms must be counted as incorrect because they are inexact responses. Therefore, when using cloze techniques, a careful review of scores is needed to insure that the results are not artificially low.

Another tool for teachers who are trying to arrive at a good match between text and students is the Degrees of Reading Power (DRP) test developed by the New York State Education Department in cooperation with Bert Koslin of Touchstone Applied Science Associates. Currently the College Board (n.d.) has the rights to the DRP test.

Essentially, the test provides a continuous scale of reading achievement scores for students from grade three to twelve and beyond. The student achievement tests use a cloze format. All information needed to answer the test questions is included in the reading passage, so the effect of any individual's memory or personal experience is minimized. In addition to measuring student reading skill, the same scale can be applied to reading passages or textbooks. Using a readability formula, the College Board analyzes textbooks and assigns a readability score that is expressed in the same terms as the student achievement score. Thus, a single scale is the basis for assessing both the text's readability and the students' reading power.

One additional feature of the DRP is especially important to teachers. From the student's raw score, three other scores can be inferred: the *independent* level of reading, the *instructional* level of reading, and the *frustration* level of reading. These levels indicate, respectively, the level of passage difficulty a student can handle alone, with instructional assistance, or the level beyond which the student is unlikely to comprehend the text even with the assistance of the teacher. By comparing these three scores for the students in a given class, the teacher can determine the range of reading ability of the class. The information can guide text and supplementary materials selection. Teachers can decide which materials can be reasonably assigned to specific individuals for use inside or outside class.

The recognition that a single student reads on a variety of levels suggests that individuals read some texts with greater facility than others. Klare and Schumacher (1981) have pointed out that prior knowledge, incentives for gaining knowledge, and reading interest all influence a student's ability to comprehend different texts. The student who reads a history text with ease may find it very difficult to read a physics text, even though both books are written at the same level of difficulty according to a readability formula.

## What are the features of a text that make it readable?

Recent research on the nature of the interaction between the reader and the text suggests that many extratextual features influence the reader's ability to learn from text. Readers' prior knowledge influences the degree to which they will be able to make text meaningful. This prior knowledge, however, is more than content knowledge. It also includes the reader's understanding of how language works, how texts are structured, and how various parts of the text work together. Consequently, it is important to consider one more factor when examining texts and other reading materials: the language structures in the text itself that facilitate or interfere with the ability of students to comprehend (Estes, 1982).

Some research has been conducted that illuminates the congruence between the rules for structuring text that are known to young readers and the application of those rules in stories, or narratives. However, Estes (1982) points out that this line of research has been less fruitful when it examines the rules that govern content area textbooks. Chapter titles, paragraph divisions, subtitles, and illustrations with captions are all intended to help the reader understand the text. Unfortunately, when Anderson, Armbruster, and Kantor (1980) examined a variety of textbooks for different age groups and in different subject matters, they found that the texts were organized around misleading titles, the main ideas were often obscure, crucial information was omitted, the texts often presented contradictory information, and the texts were ambiguous.

The structures inherent in text are, of course, only half of the issue, if one believes that text and reader interact. Estes (1982) reports research that examines the other half of the partnership. In an effort to understand how readers perceive text, Estes designed a procedure using these steps:

1. Readers were asked to divide texts into "idea units," indicating where in the text an idea began and where it ended.
2. Readers were asked to rate the importance of these ideas with respect to their perception of the author's main points.
3. Readers were asked to rate the familiarity of these ideas.
4. Readers were asked to read text passages and to record everything they could recall from the reading.

Using these procedures, Estes has begun to develop a picture of several texts as they are perceived by readers. One of the interesting outcomes of this work is that there is only a moderate relationship between the importance of an idea and the likelihood of its being remembered. Upon examination, Estes noticed that these important, but poorly recalled ideas, are often expressed in very dense chunks of prose:

> A species is a population of individuals that are more or less alike and that interbreed and produce fertile offspring under natural conditions.

Similarly, important principles often were not stated explicitly or were not given sufficient emphasis. The use of inconsistent or unrepresentative examples of principles also leads to confusion for the reader. Often, the details of the example are remembered more clearly than the principle the example illustrates.

Several researchers have attempted to rewrite textbooks to see if comprehension could be increased. Wetmore (1980) developed seven guidelines for making text more clear:

1. Write unimportant ideas as briefly as possible, avoiding the use of vivid examples.

2. Tighten the relationships between examples and important ideas.
3. Turn negative statements of important principles into positive ones.
4. Enumerate important points.
5. Attach semantic labels to important concepts.
6. Underline technical terms.
7. Indicate straw men, or arguments that are set up to be disproven.

Wetmore found that rewriting text passages following these guidelines led to an increase in the total number of ideas recalled, in the number of important ideas recalled, and in the correlation between the importance of an idea and the likelihood of its recall.

While it is unlikely that teachers will restructure or rewrite text, the guidelines do suggest two ways teachers can help students learn from text. First, these guidelines can be used as the basis for the teacher's lecture, whether the lecture illustrates the principles contained in the text or uses the text as the elaboration of the lecture. Second, the teacher can directly assist students in using their textbooks by drawing attention to technical terms, straw men arguments, and important concepts or key points. Specific suggestions for helping students learn from text can be found in Chapters 4, 5, and 9 of this volume.

## Summary

For a long time, readability formulas have been recommended as a way for teachers to gauge students' potential difficulty with textbooks. Readability formulas typically indicate text difficulty by using a quantitative measure of word and sentence length; that is, longer words and sentences are assumed to be more difficult than shorter words and sentences. More recently, however, it has been argued that readability formulas are at best only a rough indicator of how students will respond to a text. Alternative procedures that teachers can use to estimate the match between students' reading achievement and the difficulty level of the text include the cloze procedure and the DRP test. Both of these procedures yield estimates of readability in terms of the independent, instruction, and frustration levels of reading. However, like readability formulas, the cloze and the DRP do not adequately measure three other factors that influence how well students will comprehend their assigned texts. These additional factors include the reader's interest, background knowledge, and the structure of the text itself. Although teachers are limited in what they can do to alter any of these three factors, they can make students aware of the importance of using prior knowledge and text structure to comprehend what they read.

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# PART THREE
# Knowing How

# 8

David W. Moore
Ann G. Murphy

# Selection of Materials

## What are the best procedures for textbook selection in the content areas?

Textbooks are a central feature of secondary school instruction. Descriptive research into U.S. secondary school instruction indicates the prevalent use of textbooks (Fancett & Hawke, 1982; Goodlad, 1984; Jarolimek, 1977; Stake & Easley, 1978). Furthermore, historical research indicates that this prevalence has persisted for at least the past 100 years (Cuban, 1984). In most schools, each student receives a copy of the text adopted for each class. The texts then constitute the core of the curriculum; teachers rely on them as the primary sources of the information to be imparted to students. However, as noted in the first chapter of this volume, the actual reliance students place on texts is suspect. Students seem to rely to varying degrees on teachers' restatements or explanations of textual materials.

This chapter presents information about selecting textbooks. First, reasons for the authority of textbooks are depicted in order to emphasize the necessity for careful textbook selection. Then two selection procedures are presented, checklists and field tests.

### *The Authority of Textbooks*

The centrality of textbooks to schooling comes in part from two sources of authority. One source is the nature of the written language they contain (Olson, 1980). Written materials dissociate the author from the reader; the sender of the message is separated from the receiver. This separation provides an impression of objectivity and validity that frequently is missing in face to face conversation. Students are unable to argue with or question an author who is absent. Along with the dissociation of writer and speaker, the writing style of textbooks grants them much authority. Textbook authors generally assume an all knowing stance. Textbooks cover substantial amounts of information, so detailed accounts that informally connect phenomena to readers' lives are rare. Finally, textbooks can be difficult to understand. Readers who struggle for basic comprehension of textbook contents have little capacity left for thinking critically about those contents. Thus, the magisterial tone of textbooks leads readers to grant them much prestige.

Another source of text authority comes from the ideology of traditional schooling (Luke, DeCastrell, & Luke, 1983). A prevalent ideology of U.S. schools is cultural reproduction; that is, schools are expected to transmit a common body of knowledge to their students. Secondary school students are expected to know the Bill of Rights and be familiar with the periodic table of elements. Graduating seniors are expected to know about the contributions of Confucius, Marie Curie, Ernest Hemingway, and other historical figures. Such expectations lead teachers to rely on textbooks because they are handy repositories of this approved information.

Teachers rely on textbooks for reasons other than the authority textbooks assume. Teachers save preparation time by systematically presenting information from a textbook; finances limit materials available; and managing students is easier with only a few materials because routines are easier to control. Indeed, reliance on textbooks occurs only because many powerful forces contribute to it.

### *Selection Procedures*

Given the prevalence and authority of single textbooks in secondary schools, procedures should be followed for selecting only the best ones. Although data based evidence is lacking, the most effective textbook selection procedure seems to involve the use of checklists and field tests. These procedures are recommended because few worthwhile alternatives are available. Readability formulas, the cloze procedure, and the Degrees of Reading Power (DRP) test (as presented in the preceding chapter) provide some information about the difficulty of a textbook, but they are not acceptable criteria by themselves. Additional information is needed to decide the suitability of a particular text.

Farr and Tulley (1985) report that adoption committees select most textbooks. In some cases, review takes place at both state and district levels. In studying the processes of selection, these researchers found a need for improvement and suggested a focus on strengthening the validity and utility of the criteria used in the selection process. Their review of 70 criteria sheets used by school districts found only one common criterion – the copyright date of the textbook.

Farr and Tulley recommend the following for improving adoption practices:

1. Recognize that selecting a textbook is not the same as selecting a curriculum.
2. Focus attention on those factors most likely to identify effective textbooks. Shorten and focus criteria lists; include criteria from research on effective learning.
3. Review specific examples of each of the criteria. Identify specific strengths and weaknesses of each textbook reviewed.
4. Try out and revise all evaluation procedures to be used in the adoption process prior to implementing the actual review.
5. Take time for committee members to learn about the review process, to develop valid and reliable procedures, and to actually review the textbooks in depth.
6. Conduct review and adoption processes at the local district or school level.

*Checklists.* As Farr and Tulley indicated, checklists can be valuable tools for evaluating textbooks and other instructional materials; they focus attention on specific aspects of materials that might be overlooked. Checklists also can be derived from research into features of text that affect understanding. There is research evidence that supports certain conventions of writing (Klare, 1984). For instance, clear textual headings, illustrations, and graphics produce reasonably consistent effects on reading comprehension under certain conditions (Levie & Lentz, 1982; Wright, 1977). Items that focus textbook selectors' attention to these features can be placed in a checklist. Finally, checklists go beyond the aspects of a passage that readability formulas assess. For instance, they can focus evaluators' attention on the effectiveness of introductions and conclusions found in chapters. This characteristic allows checklists to provide perspectives that are more complete than the perspectives provided by readability formulas (Davison, Lutz, & Roalef, 1981).

Many checklists have been proposed for evaluating secondary textbooks (Armbruster & Anderson, 1981; Clewell & Clifton, 1983; Harker, 1977; Irwin & Davis, 1980; Jevitz & Meints, 1979; Readence, Bean, & Baldwin, 1986; Singer, 1986; Vaughan & Estes, 1986). Although many of the criteria included on these checklists are derived from research based information about what is associated with readable texts, it is important to realize that none of the lists has been validated; no study of the outcomes of using checklists was found. Two checklists that illustrate the status of this tool for textbook selection follow (Irwin & Davis, 1980; Singer, 1986).

### Irwin-Davis Readability Checklist*

This checklist is designed to help you evaluate the readability of your classroom texts. It can best be used if you rate your text while you are thinking of a specific class. Be sure to compare the textbook to a fictional ideal rather than to another text. Your goal is to find out what aspects of the text are or are not less than ideal. Finally, consider supplementary workbooks as part of the textbook and rate them together. Have fun!

Rate the questions below using the following rating system:

5 - Excellent
4 - Good
3 - Adequate
2 - Poor
1 - Unacceptable
NA - Not appropriate

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* From J.W. Irwin and C.A. Davis "Assessing Readability: The Checklist Approach." *Journal of Reading*, 1980, *24*, 129-130.

Textbook Title ______________________________
Publisher ______________________________
Copyright Date ______________________________

*Understandability*

A. _____ Are the assumptions about students' vocabulary knowledge appropriate?
B. _____ Are the assumptions about students' prior knowledge of this content area appropriate?
C. _____ Are the assumptions about students' general experiential background appropriate?
D. _____ Does the teacher's manual provide the teacher with ways to develop and review the students' conceptual and experiential backgrounds?
E. _____ Are the new concepts explicitly linked to the students' prior knowledge or to their experiential backgrounds?
F. _____ Does the text introduce abstract concepts by accompanying them with many concrete examples?
G. _____ Does the text introduce new concepts one at a time with a sufficient number of examples for each one?
H. _____ Are definitions understandable and at a lower level of abstraction than the concept being defined?
I. _____ Is the level of sentence complexity appropriate for the students?
J. _____ Are the main ideas of paragraphs, chapters, and subsections clearly stated?
K. _____ Does the text avoid irrelevant details?
L. _____ Does the text explicitly state important complex relationships (e.g., causality, conditionality) rather than always expecting the reader to infer them from the context?
M. _____ Does the teacher's manual provide lists of accessible resources containing alternative readings for very poor or very advanced readers?
N. _____ Is the readability level appropriate (according to a readability formula)?

## *Learnability*

### Organization

A. _____ Is an introduction provided in each chapter?

B. _____ Is there a clear and simple organizational pattern relating the chapters to each other?

C. _____ Does each chapter have a clear, explicit, and simple organizational structure?

D. _____ Does the text include resources such as an index, glossary, and table of contents?

E. _____ Do questions and activities draw attention to the organizational pattern of the materials (e.g., chronological, cause and effect, spatial, topical)?

F. _____ Do consumable materials interrelate well with the textbook?

### Reinforcement

A. _____ Does the text provide opportunities for students to practice using new concepts?

B. _____ Are there summaries at appropriate intervals in the text?

C. _____ Does the text provide adequate iconic aids such as maps, graphs, illustrations, etc. to reinforce concepts?

D. _____ Are there adequate suggestions for usable supplementary activities?

E. _____ Do these activities provide for a broad range of ability levels?

F. _____ Are there literal recall questions provided for the students' self-review?

G. _____ Do some of the questions encourage the students to draw inferences?

H. _____ Are there discussion questions which encourage creative thinking?

I. _____ Are questions clearly worded?

### Motivation

A. _____ Does the teacher's manual provide introductory activities that will capture students' interest?

B. _____ Are chapter titles and subheadings concrete, meaningful, or interesting?

C. _____ Is the writing style of the text appealing to the students?

D. _____ Are the activities motivating? Will they make the student want to pursue the topic further?

E. _____ Does the book clearly show how the knowledge being learned might be used by the learner in the future?

F. _____ Are the cover, format, print size, and pictures appealing to the students?

G. _____ Does the text provide positive and motivating models for both sexes, as well as for other racial, ethnic, and socioeconomic groups?

*Readability Analysis*

Weaknesses

1. On which items was the book rated the lowest?
2. Did these items tend to fall in certain categories?
3. Summarize the weaknesses of this text.
4. What can you do in class to compensate for the weaknesses of this text?

Assets

1. On which items was the book rated the highest?
2. Did these items fall in certain categories?
3. Summarize the assets of this text.
4. What can you do in class to take advantage of the assets of this text?

## Singer Friendly Text Evaluation Scale*

*Directions:* Read each criterion and judge the degree of agreement or disagreement between it and the text. Then circle the number to the right of the criterion that indicates your judgment.

1. SA = Strongly Agree
2. A = Agree
3. U = Uncertain
4. D = Disagree
5. SD = Strongly Disagree

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* Harry Singer in E.K. Dishner et al. (Eds.), *Reading in the Content Areas*, second edition. Copyright 1986 by Kendall/Hunt. Reprinted by permission of Kendall/Hunt Publishing Company.

| I. Organization | SA | A | U | D | SD |
|---|---|---|---|---|---|
| 1. The introductions to the book and to each chapter explain their purposes. | 1 | 2 | 3 | 4 | 5 |
| 2. The introduction provides information on the sequence of the text's contents. | 1 | 2 | 3 | 4 | 5 |
| 3. The introduction communicates how the reader should learn from the text. | 1 | 2 | 3 | 4 | 5 |
| 4. The ideas presented in the text follow a unidirectional sequence. One idea leads to the next. | 1 | 2 | 3 | 4 | 5 |
| 5. The type of paragraph structure organizes information to facilitate memory. For example, objects and their properties are grouped together so as to emphasize relationships. | 1 | 2 | 3 | 4 | 5 |
| 6. Ideas are hierarchically structured either verbally or graphically. | 1 | 2 | 3 | 4 | 5 |
| 7. The author provides cues to the way information will be presented. For example, the author states: "There are five points to consider." | 1 | 2 | 3 | 4 | 5 |
| 8. Signal words (conjunctions, adverbs) and rhetorical devices (problem-solution, question-answer, cause-effect, comparison-contrast, argument-proof) interrelate sentences, paragraphs, and larger units of discourse. | 1 | 2 | 3 | 4 | 5 |

*Discourse Consistency*

9. The style of writing is consistent and coherent. For example, the paragraphs, sections, and chapters build to a conclusion. They begin with a general statement and then present supporting ideas. The text

has a combination of these patterns. Any one of these patterns would fit this consistency criterion. 1 2 3 4 5

*Cohesiveness*

10. The text is cohesive. That is, the author ties ideas together from sentence to sentence, paragraph to paragraph, chapter to chapter. 1 2 3 4 5

II. Explication

11. Some texts may be read at more than one level, e.g., descriptive vs. theoretical. The text orients students to a level that is appropriate for the student. 1 2 3 4 5
12. The text provides reasons for functions or events. For example, the text, if it is a biology text, not only lists the differences between arteries and veins, but it also explains why they are different. 1 2 3 4 5
13. The text defines terms as they are introduced at a level that is familiar to the student. 1 2 3 4 5
14. The text provides necessary background knowledge. For example, the text introduces new ideas by reviewing or reminding readers of previously required knowledge or concepts. 1 2 3 4 5
15. The author uses examples, analogies, metaphors, similies, personifications, or allusions that clarify new ideas and make them vivid. 1 2 3 4 5
16. The author explains ideas in relatively short active sentences. 1 2 3 4 5
17. The explanations or theories that underlie the text are made explicit, e.g., Keynesian theory in Samuelson's economic text; Skinner's

theory in Bijou and Baer's Child Development; behavioristic or gestalt theories in psychology texts. 1 2 3 4 5

III. Conceptual Density

18. Ideas are introduced, defined or clarified, integrated with semantically related ideas previously presented in the text, and examples are given before additional ideas are presented. 1 2 3 4 5
19. The vocabulary load is appropriate. For example, usually only one new vocabulary item per paragraph occurs throughout the text. 1 2 3 4 5
20. Content is accurate, up to date, and not biased. 1 2 3 4 5

IV. Metadiscourse

21. The author talks directly to the reader to explain how to learn from the text. For example, the author states that some information in the text is more important than other information. 1 2 3 4 5
22. The author establishes a purpose or goal for the text. 1 2 3 4 5
23. The author supplies collateral information for putting events into context. 1 2 3 4 5
24. The text points out relationships to ideas previously presented in the text or to the reader's prior knowledge. 1 2 3 4 5

V. Instructional Devices

25. The text contains a logically organized table of contents. 1 2 3 4 5
26. The text has a glossary that defines technical terms in understandable language. 1 2 3 4 5
27. The index integrates concepts dispersed throughout the text. 1 2 3 4 5

28. There are overviews, preposed questions, or graphic devices such as diagrams, tables, and graphs throughout the text that emphasize what is to be learned in the chapters or sections. 1 2 3 4 5
29. The text includes marginal annotations or footnotes that instruct the leader. 1 2 3 4 5
30. The text contains chapter summaries that reflect its main points. 1 2 3 4 5
31. The text has problems or questions at the literal, interpretive, applied, and evaluative levels at the end of the chapter that help the reader understand knowledge presented in the text. 1 2 3 4 5
32. The text contains headings and subheadings that divide the text into categories that enable readers to perceive the major ideas. 1 2 3 4 5
33. The author provides information in the text or at the end of the chapters or text that enable the reader to apply the knowledge in the text to new situations. 1 2 3 4 5
34. The author uses personal pronouns that make the text more interesting to the reader. 1 2 3 4 5

Total ____________

*Score*

Add the numbers circled.
Score range: 34 to 170 points

*Interpretation of Scores*

A score closer to 34 implies the text is friendly; scores closer to 170 suggest the text is unfriendly.

*Field tests.* Because no evidence is available, little can be said about the research evidence supporting field tests as a procedure for selecting textbooks. Few discussions of how to conduct field tests are available. This section, which distinguishes between field test tryouts and field test inventories, necessarily will be brief.

Field test tryouts consist of classroom trials using materials being considered for selection. Teachers use samples of the materials to conduct lessons as part of their everyday classroom routine. The difference between a field test tryout and regular instruction is that with tryouts teachers pay especially close attention to their students' reactions to the materials. If the students correctly answer questions about much of the material, teachers have reason to believe the level of difficulty is appropriate. If students comment that the materials are interesting, then teachers have more positive data to consider. Trying out materials for an extended time is recommended.

Rather than trying out materials in several lessons, field test inventories can be conducted. These inventories are patterned after group reading inventories, also termed content reading inventories (Readence, Bean, & Baldwin, 1986; Roe, Stoodt, & Burns, 1983). The difference is that the outcomes of field test inventories are used to make decisions about selecting materials, whereas the outcomes of traditional reading inventories are used to make decisions about instructing students. Field test inventories consist of a set of 10 to 20 questions derived from a portion of the text being considered for selection. Students read the portion of text and answer the questions on their own. Materials are considered suitable for instruction if the students correctly answer about 75 percent of the questions. The following is a sample field test inventory presented by Roe and his colleagues (1983, p. 288).

### Sample Field Test Inventory*

*Vocabulary*

1. What is meant by the term *diplomacy?*
2. Define *secede.* Define *allies.*

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* From B.D. Roe, B.D. Stoodt, and P.C. Burns, *Secondary School Reading Instruction: The Content Areas*, second edition. Copyright 1983 by Houghton Mifflin. Reprinted by permission of Houghton Mifflin.

3. What is a synonym for the word *treaty?*
4. Divide the word *confederation* into syllables.
5. Write the definition of the word *relations* as used in the passage.
6. What did the author mean by "keeping their grip on the Northwest"?

*Literal Comprehension*

1. What job did John Jay have in the Confederation government? (Detail)
2. Why did the English remain in forts along the Great Lakes? (Detail)
3. Why was the Treaty of Paris important to the people of Tennessee and Kentucky? (Detail)
4. List, in order, the sequence of steps in the discussion of problems with Spain. (Sequence)

*Interpretive Comprehension*

1. Do you agree with the directive of Congress to Jay in 1786? Why or why not? (Evaluation)
2. What do you think the people began to want from their national government? What makes you think this? (Inference)
3. Why did the U.S. under the Articles have so much difficulty in dealing with other nations? (Conclusion)

A great deal of teacher judgment is involved in field test tryouts and inventories. To repeat, there is a clear need for research based insights and guidelines into procedures for textbook selection in the content areas.

### *Qualifications*

Two qualifications should be kept in mind about the textbook selection procedures described. First, checklists and field tests seem to be useful for evaluating texts on a somewhat general level. They are not designed to pinpoint all the specific strengths and limitations of texts. Materials typically are uneven in their coverage of aspects of the curriculum. For instance, a U.S. history text might present westward expansion quite well but treat Reconstruction superficially. The presentation of certain topics might be inaccurate or in-complete. Teachers need to be sensitive to the shortcomings of the texts as they guide their students through them.

Second, selection procedures need to emphasize considerations about the instructional design as well as the instructional content of texts. The checklist and field test procedures presented here are appropriate for determining whether students find materials understandable. Checklists and field tests were not presented as procedures for determining whether the materials adequately covered the content and skills expected of students in a particular school district. For example, a U.S. history text might present excellent higher order comprehension questions but virtually ignore the nature of the pluralistic society in the United States. If a strong treatment of multicultural education were considered crucial for meeting the objectives of a school district's curriculum, then the U.S. history text would have a serious shortcoming. Remember, textbook selection should be based on concerns for instructional content as well as instructional design.

## Summary

In summary, some powerful forces lead to the prevalence of textbooks. Given the prevalence and authority of textbooks, procedures are crucial for selecting the best ones. Although the absence of research into this issue is extremely disconcerting, the use of checklists and field tests seems to comprise the best procedures.

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## 9

Donna E. Alvermann

# Integrating Oral and Written Language

### How can teachers integrate oral and written language instruction?

In the everyday use of the word *integration*, as in the integration of the language arts, you might think the word means a bringing together of elements that otherwise would not be joined naturally. On the other hand, like Atwell (1983, p. 23), you might believe that integrating the language arts is a superfluous process, given that "language is always whole...that readers are also speakers, listeners, and writers, and that to be any one of these means you will be all of them."

Semantics aside, the holistic view of language as a communicative process provides a convenient and reasonable framework in which to explore ways of integrating oral and written language instruction. It is important for teachers to foster students' ability to communicate as social beings and to read, talk, listen, or write as the occasion demands, not as a discrete skills lesson dictates.

There is a three part answer to the question, "How can teachers integrate oral and written language instruction?" The first part describes the research basis for the oral language and reading connection; the second part does the same for the writing and reading connection; and the third part contains two strategies (whose component activities are based in research) for helping teachers integrate oral and written language instruction.

### *Speaking and Reading*

There is strong correlational evidence of the relationship between children's oral language competency and their achievement in reading (Loban, 1963; Ruddell, 1965). Beyond the correlational data, however, there are few studies that explore the nature of the cognitive relationship between listening and reading or speaking and reading (Crafton, 1983; Pegolo, 1983). Research on the relationship between speaking and reading primarily has been done with younger children (Ashton-Warner, 1963; Cochran-Smith, 1984; Hansell, 1984; Harste, Woodward, & Burke, 1984).

Aside from the large process-product studies in which classroom interaction was investigated for its mediating influence on achievement (e.g. Brophy, 1979), there are few studies that look at how teachers' verbal patterns differentially affect secondary students' ability to interact in group discussions over assigned content readings (Alvermann, Dillon, & O'Brien, n.d.; Berglund, 1985; Davidson, 1985; Padak, 1985; Wilkerson, 1985). Although these studies suffer from limited generalizability because of the small number of students involved in each of the investigations, the results are fairly uniform.

In general, secondary school students' discussion of what they have read is limited to short answers (sometimes only two to ten words), and their responses are directed to the teacher, rather than to one another. Recitation, rather than discussion, is a more accurate descriptor of most classroom interaction. Exceptions do exist, however. In one study, there was an exception to the recitation mode when the teacher used teacher/student generated lessons as opposed to teacher manual generated lessons (Wilkerson, 1985). Another exception was reported in a study by Walberg, Schiller, and Haertel (1979). Both studies showed that student centered discussion is advantageous to learning. The implication is that the degree of students' oral participation in completing textbook related tasks can color what and how much they learn from reading.

### *Writing and Reading*

Several research studies conducted at the secondary school level have shown that the better the reader, the better the writer and vice versa. Other studies have demonstrated the positive effects of writing instruction upon reading development. Explanations of why writing instruction has an impact on reading development have varied from those that claim writing influences sight word recognition to those that view writing as a memory enhancer. Still others have suggested that writing instruction improves reading comprehension because reading and writing are reciprocal processes that involve the structuring of meaning (Applebee, 1984; Gebhard, 1983; Shanahan, 1980).

Further reading and writing relationships have been suggested, both from a theoretical perspective and from empirical evidence. Smith (1981) has argued that reading and writing fluency are learned as a result of experiencing the processes involved, not as a result of having been taught how to read and write per se. Petrosky (1982) has argued that students should be encouraged to make public their thinking about how they respond to what they are required to read.

Others have viewed reading as a monitoring process that enables writers to make decisions about where they will go next in constructing meaning (Murray, 1982). In addition to developing self-confidence in the writer, reading for the purpose of monitoring also can aid comprehension of the text. Shanklin's view (1982) of the writing process casts reading in an important role. She points out that writers must read the text they have created for several reasons: (1) as a means of confirming that what they have written is what they intended to write; (2) as a revisionist strategy for constraining what is forthcoming in terms of text production; (3) as a means of discovering one's own thoughts – of reflecting on the old in hopes of discovering the new; and (4) as a solution to the bottleneck caused by short term memory limitations.

The writer-reader relationship also has been examined from the view of writing and reading as plan based speech acts. That is, texts are produced by writers who have plans for how they can best communicate with readers; likewise, readers develop plans for making sense out of what writers are trying to communicate. Specifically, Tierney (1982, p. 78) has identified three overlapping sets of concerns of both writers and readers as follows:

- Writers for what and how the text might be negotiated by readers;
- Readers for what writers are trying to do; and
- Readers for what they as readers need to do (for purposes of accomplishing a task or achieving an understanding).

In summary, writers and speakers do not just produce language for readers and listeners. Rather, writers, speakers, readers, and listeners all engage in reciprocal processes aimed at creating understanding through shared responsibilities of communication. To quote Nystrand and Himley (1984, p. 198), "When readers understand a text, an exchange of meaning has taken place. Writers have succeeded in speaking to readers."

### *Strategies that Help Teachers Integrate Oral and Written Language Instruction*

Whether spoken or written, language is a highly complex and interdependent system for communicating ideas and needs. By its very nature, language learning implies that reading, writing, speaking, and listening are inextricably tied. Here, the purpose is to provide two strategies that integrate, rather than isolate, the four language arts described. Although neither strategy has a strong empirical base in terms of its effectiveness, each incorporates several activities grounded in current theory and research.

*Listen-read-discuss: A content reading strategy.* The Listen-Read-Discuss (L-R-D) strategy was developed by Manzo and Casale (1985). It provides teachers with an instructional format that uses students' prior knowledge, optimizes the effectiveness of minilectures, and approximates the steps of a Directed Reading Activity (DRT). In the DRT, readers are motivated to read, exposed to relevant vocabulary, guided in their interpretations of the reading, and provided with the appropriate practice or followup activities. The steps of the L-R-D follow:

1. Choose a particularly well-organized and well-written portion of the text to introduce this strategy.
2. Provide students with a minilecture about that portion of the text.
3. Direct students to read the pages in the text that cover the material they heard in the minilecture.

4. Involve students in a postreading discussion of the assigned text in which basic understandings are clarified and more critical issues are raised. Following is a list of questions suggested to evoke the type of discussion specified:

   What did you understand best from what you read?

   What did you understand least from what you heard and read?

   What questions or thoughts did this lesson raise in your mind? (p. 733)

*Free response and opinion proof: A reading and writing strategy.* The theoretical rationale behind the free response and opinion proof strategy developed by Santa, Dailey, and Nelson (1985, pp. 347-351) is based on four well-researched principles: (1) Students need to use their background knowledge to comprehend what they read; (2) students must learn to monitor their comprehension; (3) reading and writing require similar cognitive processing; and (4) peer editing of students' written products enhances critical evaluation and thought – both central to the reading and writing process.

The four steps of the free response and opinion proof strategy follow.

1. *Free response.* Introduce students to free response with a literary or content selection that generates diversity of opinion as well as emotional reactions from students. One selection that has been used successfully with junior high and high school students is the short story "Old Horse." Give students the story with key vocabulary and ideas underlined or italicized to stimulate student reaction and discussion.

   Begin with questions to help students use their own background knowledge in thinking about the selection. For example, "Are there any teachers you will never forget? Why? Have you ever been called obnoxious names?" Then let students examine the title and predict why this particular character is called Old Horse. Before reading, tell students that every time they come to an underlined or italicized phrase or word, they should stop reading and write their reactions in the margin. Anything they jot down is correct: no one is going to be judgmental.

After students have finished reading and responding, lead a discussion focusing on their free responses. Free discussion and divergent opinions are encouraged with the teacher remaining the impartial facilitator so student responses become the catalyst for discussion.

When the discussion has run its logical course, discuss the effectiveness of free response as a reading procedure, leading students to note that the technique generates a lively discussion going far beyond mere recall of information. In fact, inferential, evaluative, and analytical thinking are the rule. Help students understand that free response encourages active involvement in reading and the integration of their own background knowledge with the selection's message.

2. *Opinion proof.* Following free response, begin the writing component by introducing students to an opinion proof writing guide. Students should examine their free responses to determine any common theme or opinions. In using "Old Horse," suggest that readers write in the left-hand column of the guide (see Example 1 following the story) an opinion about Old Horse. Next, have students reread the selection, underlining evidence to support their particular opinions. Any opinion is correct as long as it can be substantiated with evidence or inferences generated in the selection.
3. *Writing.* Students then write notes from their free responses and from the ideas they have underlined. When completed, students use the information to write about the selection. The opinion statement on the guide becomes the main idea of the paragraph, and the notes become the supporting details.

   At this point, use the framed paragraph as part of instruction in writing. Framed paragraphs take many forms depending on the assignment and the writing needs of students. (Example 2 relates to "Old Horse.")
4. *Peer editing.* The final step in this strategy is peer editing. Develop with the students a checklist specifying criteria

for editing their paragraphs. For this assignment, the checklist might include: Does my paragraph contain a main idea statement? Do I have evidence to support my main idea?

After developing the criteria, the students divide into editing groups of two or three and read one another's paragraphs. In addition to enjoying one another's writing, students suggest revisions based on these checklist criteria. For example, students determine if paragraphs contain well-developed main ideas or opinion statements. Then they evaluate whether the opinion statements are convincing, given the evidence presented in the body of the paper. Student editors also offer suggestions regarding mechanics and spelling. After editing, the authors can revise before submitting the draft for teacher evaluation.

### Old Horse*

Old Horse was the algebra instructor at the school where I teach. I don't remember his real name any more. But he had a long face with big, square teeth, and so the students called him Old Horse.

Perhaps they would have liked him more if he hadn't been so sarcastic. With his cutting remarks Old Horse could force the most brazen student to stare at the floor in silence. Even the faculty had a healthy respect for his sharp tongue.

One day a boy named Jenkins flared back at old Horse, "But I don't understand this," said Jenkins, pointing to a part of a problem on the board.

"I'm not surprised," said Old Horse. "But do try to think a little today."

"But you don't help me enough," said Jenkins.

"I'm doing the best I can considering the material I have to work with," said Old Horse.

"You're trying to make a jackass out of me," said Jenkins, his face turning red.

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*"Old Horse," Oliver Andresen, *Luther Life*, 1959, 71. Reprinted by permission of the author.

"But, Jenkins, you make it so easy for me," said Old Horse – and Jenkins' eyes retreated to the floor.

Old Horse retired shortly after I came. Something went wrong with his liver or stomach, and so he left. No one heard from him again.

One day, however, not too long before Old Horse left, a new boy came to school. Because he had buck teeth and a harelip, everybody called him Rabbit. No one seemed to like Rabbit much either. Most of the time he stood by himself chewing his fingernails.

Since Rabbit came to school in the middle of October, he had make up work to do in algebra every day after school. Old Horse was surprisingly patient during these sessions. He would explain anything Rabbit asked. Rabbit, in turn, always did his homework. In fact, he came early to class, if he could manage it. Then after the lesson, he would walk with Old Horse to the parking lot.

One Friday because of a faculty meeting Old Horse didn't meet with Rabbit. That afternoon I walked with Old Horse. We were passing the athletic field when suddenly he stopped and pointed. "What's the matter with that one?" he asked. He was referring to Rabbit, standing alone chewing his fingernails while watching some boys pass a football.

"What do you mean?" I asked.

"Why doesn't he play ball, too?" Old Horse demanded.

"Oh, you know how it is. He came in later than the others, and besides – "

"Besides what?"

"Well, he's different you know? He'll fit in sooner or later."

"No, no, no. That won't do. They mustn't leave him out like that."

Then we had to break off the conversation because Rabbit had hurried over to join us. With a smile he walked beside his teacher, asking him questions.

Suddenly one of the boys from the athletic field called out, "Yea, Old Horse! Yea, Old Horse!" and then he threw back his head and went, "Wheeeeeeeeeee!" like a horse's whinny.

Rabbit's face reddened with embarrassment. Old Horse tossed his head but said nothing.

The next day the students from my fifth hour class came to my room awfully excited. Old Horse had gone too far, they said, he ought to be fired. When I asked what had happened, they said he had picked on Rabbit. He had called on Rabbit first thing and deliberately made him look ridiculous.

Apparently Rabbit had gone to the board with confidence. But when he began to put down some numbers, Old Horse said they looked like animal tracks in snow. Everybody snickered, and Rabbit got nervous.

Then Old Horse taunted him for a mistake in arithmetic. "No, no, no. Can't you multiply now? Even a rabbit can do that."

Everyone laughed, although they were surprised. They thought Rabbit was Old Horse's pet. By now Rabbit was so mixed up he just stood there, chewing his fingernails.

"Don't nibble!" Old Horse shouted. "Those are your fingers, boy, not carrots!"

At that Rabbit took his seat without being told and put his red face in his hands. But the class wasn't laughing any more. They were silent with anger at Old Horse.

I went in to see Old Horse after my last class. I found him looking out the window.

"Now listen here –" I began, but he waved me into silence.

"Now, now, now, look at that. See?" He pointed to Rabbit, walking to the athletic field with one of the boys who complained about how mean Old Horse had been.

"Doesn't he have a special class with you now?" I asked after a moment.

"He doesn't need that class any more," said Old Horse.

That afternoon I walked with Old Horse to the parking lot. He was in one of his impatient moods, and so I didn't try to say much. Suddenly from the players on the athletic field a wild chorus broke out, "Yea, Old Horse! Yea, Old Horse!" And then Rabbit, who was with them, stretched his long neck and screamed "Wheeeeeeeeeee!"

Old Horse tossed his head as if a large black fly were bothering him. But he said nothing.

### Example 1
### Opinion proof writing guide

| Opinion statement | Evidence to prove my opinion |
|---|---|
| Old Horse was sensitive. | He was patient with Rabbit.<br>He wanted Rabbit to belong.<br>Old Horse forced Rabbit to dislike him.<br>He put himself down for the sake of Rabbit. |

### Example 2
### Framed paragraph

Old horse was ____________ . One reason I feel this way ____________ . In addition, ____________ . Finally, ____________ . Therefore, ____________ .

An example of student response:

Old Horse was a very sensitive teacher. One reason I feel this way was because of his ability to understand Rabbit. Rabbit was not liked by the other students in his class because he was a friend of Old Horse's. In addition, Old Horse understood Rabbit's need to become a part of a group of friends, and Old Horse knew that he was part of the problem. Finally, Old Horse forced Rabbit to dislike him so that he could become accepted by the other students. Therefore, Old Horse was a very sensitive man. He even sacrificed himself for the sake of his student.

## How can teachers talk with students about their reading? How can students talk with one another?

A legitimate concern of secondary school teachers is how to help students learn from text using the discussion method. Their concern is supported by two comprehensive educational reform studies: *A Nation at Risk* (National Commission of Excellence in Education, 1983) and *A place called school* (Goodlad, 1984). Also, the National Assessment of Educational Progress (n.d.) recently released its report on the trends in reading achievement over the past four national assessments from 1971-1984. Like the two reports that preceded it, the NAEP report called for reading instruction that places an increased emphasis on higher level reading and thinking skills. One of the activities recommended to foster the development of these skills is the discussion of information drawn from students' reading experiences. As Smith, Carey, and Harste (1982, p. 25) have noted, discussion helps to "soften the boundaries between the language of text and the language of the environment."

Unfortunately, despite the expressed concerns and research that indicate learning is related positively to higher frequencies of student talk relative to teacher talk (Brophy, 1979), reading methods textbooks generally do not provide the preservice or inservice teacher with suggestions about how to conduct a discussion. Singer and Donlan's *Reading and Learning from Text* (1985) is the one major exception; the authors of that text devote an entire chapter to discussion.

### *Definitions of Discussion*

Some early pedagogical writers equated discussion with conversation – an informal chat carried on in a free manner with no overt tones of formal instruction (Landon, 1899). Teachers who used this method encouraged students to speak freely on whatever topic they wished; the teacher's role was one of directing and guiding students' thoughts by asking them frequent questions, often for the purpose of holding their attention. Later, discussion was described as a "cooperative attack on a common set of problems, based on a common set of data, materials, and experiences" (Bloom, 1954, p. 38). Stanford and Stanford (1969, p. 16) added a dimension, "to gain feelings of acceptance and belonging." In a definitive work on discussion entitled *Education, Democracy, and Discussion*, Bridges (1979, p. 15) posed what he termed the necessary and sufficient conditions for specifying that individuals are engaged in a discussion. Individuals "are putting forward more than one point of view on a subject...[and] are at least disposed to examine and to be responsive to the different points of view put forward, with the intention of developing their knowledge, understanding and/or judgment on the matter under discussion." Finally, discussions can serve several instructional purposes. They can be used to induce subject mastery, to bring about a change in attitude, or to engage students in problem solving (Gall & Gall, 1976). For purposes of this chapter, discussions are defined in terms of Bridges' criteria.

*Planning and Implementing a Discussion*

Planning and implementing a discussion have been compared to playing a board game, such as Monopoly. Just as in most games, it is usually the cards you choose and the moves you make that govern the outcome of the game. So it is with the effective planning and implementation of discussion. Neither students nor teachers can play the game effectively if they merely rehash what was read. A more effective game plan calls for taking into account six aspects of an effective discussion: reeducating teachers and students on what effective discussions look like and what roles they play in them; planning a discussion, taking into account the purposes of the assignment and the content of the text; selecting group roles; choosing appropriate discussion strategies; guiding and monitoring the discussion; and assessing the discussion. These aspects are described here.

1. *Reeducating teachers and students.* Teachers and students need to put aside the notion that discussions are "nice extras" if there is time. Granted, discussions usually are less efficient timewise than lectures or question and answer sessions, but they can be made more efficient with proper planning. An important aspect of the reeducation process is helping students learn to listen and respond to others' points of view. Turntaking need not be limited to the raising of hands when students are reeducated as to what their responsibilities and roles are during discussions. Students must be willing to study textbook assignments prior to class time, to react to and interact with other students, and to rely on the teacher only as a group member who can intervene to refocus the discussion to keep it on track. In short, students cannot remain passive participants if discussion is to be effective. Teachers, too, need to be reeducated about the discussion process. Ideally, the teacher's role changes from information giver or examiner – roles typically associated with lecturing and recitation – to resource person or facilitator. This change from a directive to a more nondirective role is the inverse of the student role change recommended (Alvermann, Dillon, & O'Brien, 1986).

2. *Planning a discussion.* Planning an effective discussion begins with determining the purpose of the reading assignment and making a decision about how many students will be in the discus-

sion group. For example, a large group discussion might be more beneficial if the teacher's purpose is to have students engage in problem solving. Planning a discussion also involves specifying one or more of the following objectives:

- Tap the resources students bring to their school subjects.
- Provide students with the time necessary to formulate their own applications of abstract principles.
- Obtain immediate feedback on how well students are understanding a lesson's objectives.
- Provide students with instruction and practice in how to think about particular subject matter.
- Build students' confidence in their ability to evaluate the logic of their own ideas and the ideas of others.
- Promote student awareness of the need to formulate problems and questions based on information gained from reading or listening to a lecture.
- Foster the notion that new ideas may challenge and sometimes change one's previous ideas (McKeachie, 1978).

3. *Selecting group roles.* Groups are composed of individuals who possess different skills and interests. The teacher's responsibility is to see that the group functions as a whole. To be effective, a discussion must involve each student. Often the teacher may have to serve as a facilitator of group discussions to ensure that quiet or passive students have an equal opportunity to express their ideas. If the facilitator sets the tone of a discussion by putting forth a critical issue or posing a provocative question, students will follow through. At some point, however, the discussion will begin to wander, and the teacher will need to redirect or refocus the students' talk. As long as the teacher keeps a low but supportive profile, the discussion will belong to the students. (For a more detailed discussion on grouping, see Chapter 10.)

4. *Choosing appropriate discussion strategies.* Professional articles and methods textbooks used in teacher education courses frequently feature strategies designed to help students discuss their background experiences in relation to the material they are assigned to read. Although empirical support is slim for many of these strategies, some have a strong intuitive appeal. Three strategies are de-

scribed here. They were selected on the basis of their judged usefulness in helping students read and think critically through whole class discussion.

Modeling after Posner et al.'s four step model of conceptual change instruction (1982), Hynd and Alvermann (1986) developed a conceptual change discussion strategy teachers can use when students hold incorrect ideas about a concept and are unwilling to relinquish those ideas, even when they are refuted in their textbooks. This situation occurs frequently when students are asked to read text that presents some highly counterintuitive information – for example, Newton's laws of motion. There are four steps to the conceptual change discussion strategy. The example here makes use of the confusion surrounding the medieval impetus theory vs. Newton's theory of motion. Impetus theory states that an object maintains its forward motion because of an inner force acquired when the object was set in motion. According to impetus theory, therefore, a ball that is whirled in a circle at the end of a string will continue to travel in a circle if the string breaks. Newton's theory of motion states that an object continues to move forward until another force acts on it to change its velocity. Steps in the conceptual change discussion strategy follow.

- Develop student dissatisfaction with the misconception in a prereading discussion in which you elicit from students their predictions about the path a stone will take if dropped from shoulder height by a person walking forward at a brisk pace. Ask students to sketch what they think will happen. Next, have them read an appropriate section of the text assignment to see if Newton would agree with their predictions.
- Determine through discussion whether the new (correct) concept is understandable. Students could demonstrate whether they understood the textbook explanation by reconstructing their sketch from the previous step. (Note: A dictionary definition or illustration of a parabola may be helpful.) Students may not be willing to relinquish their belief in impetus theory yet. At this point, it is only important that they can represent correctly the path the stone would take according to Newton's theory.

- Determine if the new concept is plausible. Be careful, however, that students do not think they are alone in their misconceptions. The teacher could help students reconcile the text information from their previous concepts of motion theory by reading aloud to them a portion of an encyclopedia article on the myths surrounding the medieval impetus theory. Discuss why many people today still find it difficult to give up their belief in the impetus theory.
- Invent a situation for making use of the new concept. The objective here is to help students convince themselves of the usefulness of Newtonian mechanics in explaining something of real world importance to them. Athletes would find Newtonian principles of motion important in understanding their various activities. Students could be asked to predict, for instance, where a ball carried at shoulder height by a basketball player will land if it is dropped while the player is walking forward at a brisk pace. Or they might be asked to predict where rescue equipment or vital supplies would fall if they were dropped from an airplane or pushed off a cliff to people waiting below. Students asked to think about these situations might be convinced of the need for learning Newtonian principles.

Unlike the discussion strategy, the content prompts strategy is useful when unstructured or nondirective discussion is the objective. Members of Eileen Francis' Discussion Development Group in Edinburgh, Scotland, have used the content prompts strategy for over four years in their work in developing free and open discussions over both controversial and noncontroversial issues (Francis, n.d., p. 3). The strategy works like this:

- Prior to the scheduled class period in which this strategy will be introduced, type or print a number of statements (prompts) about the topic to be discussed. Fold the strips and place them in a box, from which each member of the group draws an equal number of prompts. For example, statements about the topic "Causes of Juvenile Delinquency" might include the following:

  Parents let teenagers get away with too much today.

  Most delinquents are lonely – they commit [bad] acts because they have few friends.

Rising unemployment is the problem – teenagers have feelings of hopelessness and injustice.

Allow students a few minutes to think about each of the statements they drew.

- After about five minutes of thinking time, encourage students to participate in an open discussion of the issue. At this point, the content prompts come in handy. While not all students will want to use them, the shy, less assertive members in the class may find the prompts useful as catalysts to get their own ideas before the group.

Another discussion strategy, Group Reading for Different Purposes (GRDP), involves initially assigning the same reading material to all students, then breaking the group into subgroups for the purpose of assigning the smaller groups different tasks to complete. According to Dolan and his colleagues (1979), the objective of the GRDP strategy is for each subgroup to devise a set of questions for the class to answer as a whole. They suggest the following tasks be placed on 3" x 5" index cards and distributed to the various groups.

- List three statements of fact and three of opinion. Then during whole group discussion ask the class to determine which is which.
- List the important topics in the passage and ask the class to weigh which four are the key ones.
- Present two arguments to support alternative explanations to a particular issue raised in the text assignment. Ask the class to determine which argument is the stronger.
- Devise a set of questions that can be answered only through reference to several paragraphs in the text, then call on members of the class to answer specific questions.
- Test a textbook author's assertions by referring to other sources. Then ask the class to decide whether the textbook author's assertions are credible.
- List three salient points whose importance is not affected by the order in which they are presented in the text. Then list three with a sequence of presentation that is crucial. Present the points randomly to the whole class and let the members categorize them.

5. *Guiding and monitoring the discussion.* The following discussion tips provide a practical approach to guiding or facilitating group talk once it is initiated (Arthur, 1984).

- Establish the relevance of the day's topic to students' needs.
- Personalize the discussion by using concrete, individualized examples and questions.
- Actively involve every person in the class, either through eye contact or verbal means. Let each student know that you are aware of his or her presence.
- Frequently call on students to review and restate concepts.
- Be patient. Allow time for students to discover and express ideas.
- Be a user, not an abuser, of humor in the classroom. Laughter is sometimes the best medicine.
- Be vulnerable. Share yourself and your experiences with the class and encourage students to reciprocate.
- Be comfortable with one another. Make time to get to know your students as individuals, not just as names in a grade book.
- Clearly establish the pecking order in your class.
- Create an overall environment in which both physical and emotional settings are conducive to learning.
- Controlled combustion is a must to clear the air. Don't hesitate to allow controversy to enter a discussion. Just as sparks ignite a fire, controversy provokes discussion that may lead to the discovery of new ideas.
- Look at questions not only in terms of the level of student thinking to be developed (e.g., inferential), but also in terms of when and where to use them during a discussion. Timing is important.
- Be a positive and productive leader. Keep the discussion constructive and channeled to pertinent issues.
- Acknowledge the worth of all responses, as well as the contributions of all responders.
- Close a discussion by allowing time for wrap-up proceedings.

6. *Assessing the discussion.* After a large group discussion, teachers and students need to determine the effectiveness of group

interactions, as well as whether the purpose for holding the discussion was met. If a video or audiotape is made of the group, share it with students. Quite often, when individuals who have blocked a free flowing discussion see themselves in a group situation, they are better able to adjust their roles in future discussions. Also, teachers and students have a better appreciation of how a discussion functions once they have analyzed it (Alvermann, Dillon, & O'Brien, 1986).

### *Accommodating Individual Differences within a Discussion*

Adapting the discussion method to accommodate the widely divergent reading levels within the typical classroom is a challenge, but not an insurmountable one. The discussion approach "makes the status structure of the classroom salient and allows it to become the basis of the prestige and power order within the interacting classroom group" (Cochran-Smith, p. 184). The simplest and most effective way to deal with this problem is to group heterogeneously and impress upon students that there is no single ability relevant to all learning situations. Therefore, individuals must not be judged on preexisting status characteristics. For example, a student who does not do well on tests still should be viewed as having the ability to contribute to a class discussion.

As discussion leaders, teachers must remain alert to the possibility that they may tend to give low ability students less time to answer questions than they do high ability students (Cohen, 1984). For instance, reading instruction at the elementary school level has been shown to vary systematically for students of different ability levels, as well as for members of different socioeconomic and ethnic groups (Anang, 1982). Whether these findings generalize to teachers and students at the secondary school level cannot be determined from the existing research.

Teachers can accommodate students with widely divergent reading levels during a discussion of previously assigned text material by skillfully coordinating questions with students' interests. Students are aware that teachers ask different levels of questions; e.g., they appear to adopt the same patterns to communicate with their teacher as they do to recall information from text in the presence of their teacher (Mosenthal & Na, 1980). In a related line of research, low anxiety students performed better than high anxiety students in classes where discussion was the predominant teaching method. In lecture method classes, however, high anxiety students did better than low anxiety students (Dowaliby & Schumer, 1973). Implications for instruction would seem to point to an adjustment (either up or down) in the amount of structure a discussion leader would impose to match students' anxiety levels.

## Summary

The correlational relationship between oral language competency and reading achievement is strong and well-documented. Writing instruction, too, is known to have positive effects on students' ability to comprehend what they have read. Reading plays a central role in the writing-reading connection. Writers are themselves their very first readers. Both writers and readers share overlapping concerns for how meaning will be negotiated from texts. Strategies are available for helping students integrate their reading, writing, speaking, and listening processes. The discussion method, in its many variations, is a legitimate approach to fostering teacher-student and student-student interaction in the secondary school classroom. To use the discussion method effectively, teachers must consider: purpose and content, a means for selecting appropriate roles for group members and appropriate discussion strategies, a plan for guiding and monitoring the discussion, and a means for assessing the discussion process per se.

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# 10

Mark W. Conley

# Grouping

## What are the mechanics of group work in the classroom?

Considerable research exists about how to use small group instruction in the classroom. Most of this research has been centered at the elementary level where ability based, small groups focus on learning to read strategies (Duffy & Roehler, 1986). In secondary classrooms, the focus is on reading to learn, or strategies that develop concepts and thinking beyond the text (Singer & Donlan, 1985). Small group instruction can be rare at the secondary level, even though group work can have a positive effect on concept development and achievement (Johnson et al., 1976).

If small group instruction facilitates learning, why is group work missing in many secondary classrooms? One reason is that group work can be difficult to manage. Teachers, as well as students, require specific types of training if small group instruction is to be effective. This chapter discusses the types and purposes of different classroom groups, details the problems associated with managing small group work, and suggests some specific approaches for managing group work during content reading lessons.

### *Classroom Groups and Their Purposes*

Early content reading textbooks recommended placing students in groups according to ability (Herber, 1970). Less able students were to be given lower level, literal tasks while more able students were to complete higher level, applied tasks. The idea behind these groupings was to help the teacher serve students with a range of ability levels according to their capabilities. Research has shown that homogeneous groups are ineffective in challenging group members to achieve beyond their current capabilities (Webb, 1982).

Some content reading texts emphasize heterogeneous groupings, mixing students with different levels of knowledge and abilities within small groups. The principal method of forming these groups is "random grouping" (Herber, 1978), although many teachers opt for other methods of achieving a heterogeneous mix in the groups (Conley, 1983). For example, some teachers designate ability levels for their students (low-medium-high) and then mix students representing each level in each of the groups. Other teachers add concerns about behavior problems to the selection process.

A frequent criticism of heterogeneous small groups is that the brighter students do all of the work for the other students. Research on group composition has shown, however, that mixed groups thrive on individual differences. Since low ability students are more accustomed to lower level, literal tasks, they become good fact finders within the groups. They often end up teaching high ability students to discriminate important details, since high ability students can gloss over literal types of information. Higher, applied level tasks are often accompanied by debate. On these tasks, low ability students can teach high ability students to engage in creative thinking beyond the text. High ability students teach low ability students to think about and substantiate their opinions. Consequently, in heterogeneous, small group discussions, students of varying knowledge and abilities can guide one another's learning (Webb & Kenderski, 1984).

In content reading, small group instruction is viewed as a "guidance strategy." That is, discussion within small groups should guide students in using their prior knowledge to construct meaning. Placing a mix of students in a small group creates pressure for discussion: Some students will have information that others lack. If study guides require group discussion and agreement, students will need to share whatever knowledge they have available so the groups can make a decision (Herber, 1978).

In the research literature on grouping, many methods and purposes are associated with small group instruction. One of the most familiar approaches involves implementing principles of cooperative learning. One of these principles is that students achieve more when they are exposed to tasks that require them to make cooperative decisions (Johnson & Johnson, 1978). Among the variations in cooperative learning is the Teams-Games-Tournaments (TGT) approach (DeVries & Slavin, 1978). In the TGT approach, students prepare one another as a team to compete against other teams in academic contests. Another variation (Slavin, 1977) is called Student Teams Achievement Divisions, where students prepare one another to succeed on tests of their knowledge of academic content. Students within each division receive the same team score. A third variation, called Small Group Teaching, engages students in cooperative inquiry (Sharan & Sharan, 1976). Teachers select an initial topic that students refine into subtopics. Small groups conduct research and collectively prepare a report that is judged by the rest of the class. These variations have been shown to have a positive effect, both on achievement and on students' attitudes toward instruction (Slavin, 1980).

Cooperative learning groups are similar to those currently used in content reading but with some important differences. Cooperative learning and content reading share the goal of fostering group cooperation so that students learn to learn from one another. Differences center on ways of achieving this goal. Because cooperative learning focuses primarily on group interaction, its procedures tend to be more elaborate than those in content reading. In contrast, content reading balances group work with a concern for reading that translates into a much simpler approach to group interaction. For example, cooperative learning emphasizes individual student roles more than content reading does. A cooperative learning group may involve four or five roles, while a content reading group may have only a leader (Conley, 1985).

Research suggests care in combining cooperative learning with certain types of academic tasks (Slavin, 1980). For example, academic tasks requiring low levels of cognitive activity, such as acquiring basic knowledge, can be easily combined with more complicated cooperative learning approaches. More complex academic tasks, such as problem solving, work best in the context of simpler cooperative learning approaches. Since content reading often involves tasks requiring higher levels of cognitive activity, such as reasoning, it is probably best to use simpler forms of cooperative learning in conjunction with content reading (Conley, 1985).

Another type of grouping involves the use of competition. To engage in group competition, students in a group must perceive that their success depends on the failure of students in other groups. Most classrooms are replete with examples of competitive group tasks that include tests and contests in which students compete with one another, rather than cooperating toward a common goal. One of the more important principles to emerge from research on grouping has been that a balance of cooperative, competitive, and individual experiences can positively influence students' social, emotional, and intellectual development (Johnson, 1981). Overuse of any form of grouping can interfere with these types of development.

Content area teachers often find it difficult to integrate different types of group learning with content reading (Conley, 1985). This difficulty is important since effective small group instruction rests on the ability of the teacher to create and maintain a climate conducive to small group learning (Vacca, 1977).

### *Problems in Managing Small Group Instruction*

In a study of content area teachers trying out small group and content reading instruction for the first time, a common concern was what they called "the problem of letting go" (Conley, 1985). Teachers in the study were referring to their own anxiety in allowing small group instruction to occur without frequent teacher intervention. Each expressed concern over whether students knew enough about grouping to conduct productive small group discussions. A well-meaning teacher sometimes will approach a group to check on progress only to prescribe the group's decisions and point out essential information. When this happens, students are no longer responsible for cooperating to make their own decisions, the principal advantage of work in small groups. While teacher monitoring is important in guiding students during small group discussions, too much teacher intervention limits opportunities for students to learn to function independently (Conley, 1986).

Students' lack of awareness of the purposes and procedures for working in groups is the major contributor to the problem of managing small groups. In addition, students may lack the motivation to engage in small group work (Johnson, 1981). Research on cooperative learning discusses the need for clearly defined rewards with any type of grouping (Slavin, 1980).

Many other variables can hinder students' group work. By its nature, group work tends to place on the student greater responsibility for learning (Slavin, 1980). Students who have grown comfortable sitting in rows and letting the teacher or other students take responsibility can be reluctant to work in small groups. Poor learners may exhibit some initial reluctance because they have rarely found success in other classroom situations. In homogeneous groups, students may compete with one another, whether the groups are composed entirely of low or high ability students (Webb, 1982). In heterogeneous groups, students may be content to let one or two of the smarter students do all of the work. Higher level students often may be willing to do all of the work because they can go faster and complete tasks their own way. Students may have difficulty completing any academic task within the groups, preferring instead to talk about anything but the lesson at hand (Conley, 1985).

To help students work productively in small groups, some teachers train them in procedures for cooperative learning. For example, in the study of teachers' first experiences with small group instruction and content reading, one teacher led her students through a grouping unit to acquaint them with the procedures involved in effective group work. Students learned group roles and procedures so thoroughly that they experienced difficulty in talking about the content reading guides. Instead, discussion was dominated by concerns about students' group roles. The cooperative learning procedures created a new dilemma: how to integrate principles of group learning with content reading and, at the same time, help students focus on content (Conley, 1985).

In short, the teacher who wants to incorporate small group instruction into content reading instruction is faced with becoming comfortable with small group instruction and with showing students how to work effectively in small groups.

*Suggestions for Managing Small Group Instruction*

Another important principle of small group instruction is that it takes time to learn how to learn in groups. It is also important to consider how you and your students can learn to function productively within the groups.

*Teachers and small group learning.* Teachers can become comfortable with small group instruction through a combination of knowledge, thoughtful monitoring, and professional support. Teachers who possess knowledge about small group instruction generally have an easier time working with small groups (Singer & Donlan, 1985).

By using groups and listening to students' discussions, teachers can learn about different aspects of small group instruction. Teachers can selectively record small group discussions to learn about students' comprehension of essential principles, the suitability of grouping and academic tasks, the social characteristics of small groups, and the effects of teacher intervention. Researchers recommend sharing the recordings with students to add to their knowledge about the purposes and procedures for grouping (Barnes & Todd, 1977).

Some approaches to grouping during content reading assume that small group instruction works best with active teacher monitoring. For example, Herber (1978) suggests that teachers should engage in a number of activities during monitoring, from initiating and regulating discussion to helping groups make decisions. They also can listen without interfering in productive discussion. For teachers accustomed to leading whole class discussions, an active role in small groups can seem natural and comfortable.

Research suggests that the amount of monitoring may not be as important as what teachers say when they approach the groups. Barnes and Todd distinguish between "tight" versus "loose" teacher direction during monitoring. Under tight direction, the teacher offers directives and asks questions that get students to recall previously learned content. With this type of monitoring, the focus is on understanding content. Loose teacher direction is characterized by inquiry and exploration. The teacher may be more interested in the process students use to conduct discussion than in the conclusions students reach.

Overemphasis of either type of monitoring can lead to less than effective group learning. Leading students to the content without showing them how to make decisions about the content fails to give students opportunities to become independent in group learning. When students discover their teacher playing "Guess what's in my head?" small group discussion loses its purpose and students become adept at extracting information from the teacher without thinking. At the other extreme, teachers can emphasize group processes to the extent that both content and group tasks become poorly defined. Teachers who are effective monitors may rarely approach the groups. When teachers do intervene, they strike a balance between directing students to the content and helping them monitor the discussion process (Conley, 1986).

This balancing act can be troublesome to a teacher accustomed to more direct involvement in student learning. Teachers need to gradually pull away from being at the center of instruction if students are to learn how to function in small groups (Singer & Donlan, 1985). Monitoring can be especially useful in establishing this gradual process.

When students are new to grouping, it is important to exercise frequent monitoring. Active monitoring at early stages functions to remind students of the purposes for group work and helps them stay on task. Teachers need to communicate positive feelings about the groups and show students that their responses will be taken seriously (Barnes & Todd, 1977).

Later, teachers should be cautious about interfering unless students ask for help, move clearly off task, or find themselves unable to make a decision. Teachers should determine a specific group's need and then help the group progress. Sometimes, clarifying the task at hand is all that is required. Other times, the group can benefit from additional information; it is important to help the group see how the information was derived (Conley, 1986).

The frequency of monitoring varies with the difficulty of lessons and students' familiarity with small group instruction. Students require greater or lesser amounts of assistance, depending on the difficulty of lesson concepts. The need for monitoring becomes less frequent as teacher and students become accustomed to working in small groups (Conley, 1986).

Another way of helping teachers become comfortable with small group instruction involves the creation of professional support groups (Johnson et al., 1984). Like cooperative learning groups, professional support groups operate on the principle that everyone in the groups succeeds by helping one another. Professional support groups are started by teachers who are interested in small group instruction. Activities include reviewing the literature on small group instruction, locating available resources, conducting and sharing lessons, and developing a questioning attitude about how principles of small group instruction relate to other instructional approaches.

Gathering knowledge, monitoring small groups, and participating in professional support groups can help teachers better understand their roles in small group instruction. Teachers also need to help students learn to work in small groups.

*Students and small group learning.* Attention to purposes for grouping and to student roles in groups is the key to success in small group learning. In addition, it is important to start at a simple level and work up to greater levels of sophistication and student responsibility while teaching students to work in groups.

In the research on grouping, emphasis is placed on helping students see clear purposes for grouping. Some of this research suggests the use of rewards as one way of developing purposes for small group learning. Cooperative learning involves interpersonal rewards: Students can find satisfaction in achieving success as a group (Johnson, 1981). Because these rewards are more intrinsic than explicit, it may be necessary to spend time explaining the benefits of cooperative learning. Some teachers prefer to make rewards explicit by grading group discussions, awarding prizes for group cooperation, or charting group achievement (Vacca, 1977).

Students need to learn about their roles and responsibilities while working in small groups. They need time to develop an awareness of how the groups operate, and how to conduct a meaningful discussion (Singer & Donlan, 1985). Students who give and receive explanations during discussion tend to achieve more than students who do not participate fully (Webb, 1984). Teachers can explain that the main function of the groups is to help students share information and ideas, a process that works best with maximum participation. Taping discussions so students can listen to themselves is one way they can examine their own participation (Barnes & Todd, 1977).

Proponents of cooperative learning suggest that students adopt specialized roles while working in groups—checker, encourager, and decisionmaker (Johnson & Johnson, 1975). Assigning these roles helps students focus on the processes involved in cooperative learning. As suggested earlier, overemphasis on group processes can limit students' ability to deal with more complicated cognitive tasks (Conley, 1985). Small groups must have someone to function as a group leader (Singer & Donlan, 1985). Group leaders can be taught specific approaches to directing discussion, including emphasizing participation and asking higher order questions.

Group roles are influenced by the size and composition of a group. Groups that grow too large tend to disperse into subgroups, and students experience difficulty in assuming coherent roles within the resulting groups. Some research recommends that groups grow no larger than eight (Barrington & Rogers, 1968). Herber (1978) suggests that five is the optimal group size. In one study, students who began in a group of five ended up forming groups of two and three that were less successful than groups that remained intact (Conley, 1985).

Groups of varied composition engender greater participation than homogeneous groups (Webb, 1982). As suggested earlier, a mix of ability and knowledge within small groups tends to encourage cooperation. Teachers can use random grouping to choose students or use their own criteria to create an "ideal mix" (Conley, 1983).

Group learning needs to be carefully phased in if students are to learn how to function in small groups. Singer and Donlan (1985) recommend three phases in implementing small group processes while reducing the role of the teacher.

*Phase 1* The teacher models the discussion he/she wants students to adopt in their groups.

*Phase 2* Students become aware of the traits in the teacher's discussion and try discussions of their own.

*Phase 3* Students gain enough expertise in conducting discussions to manage their own discussions independently.

Integrating cooperative learning with content reading requires similar attention to carefully phasing in each element of instruction (Conley, 1985). For example, students should learn to become familiar with some of the complex cognitive tasks in content reading (like reasoning) before they attempt complex forms of cooperative learning combined with complex content reading tasks.

There are no existing guidelines for how long this phasing in should take. Many teachers report that it takes at least one semester before they and their students become comfortable with working in small groups. The adjustment time can be decreased if other teachers at the same grade level in the building use small group instruction, or if students have experienced small group instruction previously (Conley, 1985).

## Summary

Group work can increase students' achievement and encourage positive feelings about learning. With appropriate knowledge and practice, teachers can use group work to help their students become more successful. Teachers and students can become comfortable and productive in small groups by carefully phasing in small group instruction. Monitoring students' progress and participating in professional support groups help teachers learn to work in groups. Students learn by becoming aware of the purposes and procedures for small group instruction.

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## PART FOUR

# Knowing When

# 11

Mark W. Conley

# Teacher Decisionmaking

## How can teachers use information about students, textbooks, and instruction to facilitate learning from secondary school textbooks?

In much of the current research, the classroom is described as a highly complex environment (Shavelson, 1983; Shavelson & Stern, 1981). Secondary teachers face problems posed by differences in students, gaps and changes in the curriculum, changing community and school mandates, and the need to preserve stable classroom routines (Cuban, 1984). Along with this emerging picture of the classroom has come the realization that teachers' classroom decisions can be incredibly difficult.

In this environment, teachers often seek the security of covering content without considering the knowledge, skills, and motivation students need to learn successfully from secondary school textbooks (Yinger, 1982). Together, these variables make up knowledge about how students learn. This chapter reviews and adds to the variables discussed previously to facilitate better decisions about how to help students learn from secondary school textbooks.

### *The Nature of Classroom Decisions*

The Figure depicts one way of thinking about the conditions that influence the decisionmaking process of teachers. In this model, teachers make initial judgments about varying instructional conditions, including the relation of students' available knowledge and motivation to the textbooks and instructional tasks about to be

**A Model of Teacher Decisionmaking***

| *Conditions* → | *Teacher Judgments* → | *Teacher Decisions* |
|---|---|---|
| Information about Students | Beliefs/Intentions/Expectations | Planning Decisions<br>Writing objectives<br>Choosing instruction |
| Nature of the Text/Discipline | Conceptions about Reading and Text | Selecting methods of evaluation |
| Nature of Instruction | Conceptions about Instruction | Interactive Decisions<br>Maintaining activity flow<br>Grouping and pacing |

*(Adapted from Shavelson & Stern, 1981)

encountered. Influenced by a teacher's expectations and available knowledge, these initial considerations lead to planning decisions that reflect a teacher's best guess about what should occur in the classroom. Because of the changing nature of classroom instruction, teachers often adapt their plans during lessons. These adaptations are termed "interactive decisions." Ideally, teachers make decisions throughout this cycle by taking into account all of the conditions; they consider students, textbooks, and instructional options before making sound judgments and instructional decisions (Shavelson & Stern, 1981).

In reality, the constraints imposed by the time and quantity of subject matter to be taught can influence teachers' decisions; they may seek relatively stress free routines to carry out their instructional goals (Cuban, 1984). For instance, Goodlad (1984) found that teachers expected students to read and study outside of class without teacher preparation or assistance.

Although this practice results in more time for lectures and other oral presentations during class time, it deprives students of instruction in how to learn from text. There are other problems in relegating the textbook to out of class reading. While the practice encourages stability in the classroom, it can also foster an emphasis on factual learning at the expense of critical or creative thinking.

At another extreme, teachers can overly attend to the behaviors of their students. Most models of teacher decisionmaking depict the teacher as constantly reacting to student behavior in order to preserve classroom stability. An emphasis on students, however, ignores the fact that teachers' decisions result from complex judgments about the classroom environment, including the availability of students' prior knowledge and the appropriateness of a particular text or instructional strategy. Effective decisionmaking cannot occur when teachers give up their decisionmaking responsibilities to the textbook or any other condition of the classroom. It can occur, however, when teachers are able to fully consider what they know about students, texts, and instruction (Anderson, 1984; Clark & Peterson, 1986).

*Knowledge about students.* Students vary widely in the amount of prior knowledge they bring to a task, in their ability to learn, in what it takes to motivate them, and in their use of metacognitive skills. These terms and their role in teacher decisionmaking are the topic of this section. For any given lesson, there may be wide variations in the prior knowledge students have available. In teaching a science fiction unit, some students may have little relevant knowledge, while others have acquired considerable expertise through independent reading. Science fiction fans may be successful in this unit, but may be unsuccessful in a unit on poetry, particularly if all they read is science fiction. Likewise, some students may possess greater prior knowledge about certain skills or the organization of different texts (Meyer, Brandt, & Bluth, 1980).

It is important to supplement and use students' prior knowledge during a lesson. Singer and Donlan (1982) investigated the effects of enriching and activating students' prior knowledge about stories. Students in the study were taught elements of stories – character, goals, outcomes, themes – to broaden their prior knowledge. Then, students were taught to use prior knowledge in asking questions to predict what came next in a story. At the end of six lessons, the students were proficient in generating good instructional questions. In addition, they comprehended elements of complex stories much better than a control group.

Students vary widely in ability. Recent research on reading disability points to both mental processing and social factors that contribute to the difference between good and poor readers (Johnston, 1985). Often, low ability readers suffer from an overreliance on one type of reading process at the expense of others. In contrast, proficient readers are able to flexibly apply different reading processes according to different tasks and purposes (Stanovich, 1980).

Variations in ability can be classified according to speed and "power" distinctions. Speed refers to the actual words per minute a student reads and power refers to the extent to which a student is able to comprehend. Slow, nonpowerful readers are virtual nonreaders who experience considerable difficulty in completing required reading. Slow, powerful readers can successfully comprehend required reading, but only if given enough time. Fast, nonpowerful readers are often referred to as students who "read pretty." They decode words successfully but experience problems in understanding what they have read. Fast, powerful readers can decode proficiently and are highly successful in getting meaning from text. All of these readers can have difficulty in reading—even the fast, powerful readers—if they do not develop flexibility (Singer & Donlan, 1985).

Motivation is a third area in which students vary. Brophy (1983, p. 2) defines student motivation to learn as "a function of the value they place on reaching the goal and their expectancy of being able to reach it if they make the effort." This definition emphasizes the intrinsic value a student places on an instructional task and on the degree to which the student has the knowledge and skills to complete the task. Students may be reluctant to read because they lack interest or skill. Secondary schooling may contribute to students' lack of interest by failing to offer functional reading tasks generally valued by society, such as reading for leisure or for work (Harste & Mikulecky, 1984). Some students are able to overcome lack of interest or deficiencies in skills because they intrinsically place a high value on being able to read.

Metacognition is a term originally coined to describe students' conscious awareness of how they learn (Baker & Brown, 1984). Students who are metacognitively aware of the reading process typically exhibit the appropriate strategic behaviors when completing a reading task (Paris, 1985). That is, they take into account their own prior knowledge, including their own repertoire of reading strategies, and self-motivation in completing a reading task.

Teachers who take into account the importance of metacognition in learning from print have a clearer understanding of why it is possible for students to possess adequate prior knowledge, ability, and motivation, and still be unable to comprehend what they read. These are the students who vary in their metacognitive awareness of what they can do to read successfully.

*Knowledge about the text.* Text structure and text content are two important areas when considering how textbooks influence what students learn. Text structure can refer to the way either expository or narrative texts are organized (Black & Wilensky, 1979). Well-organized expository texts possess identifiable superordinate and subordinate ideas (Meyer, Brandt, & Bluth, 1980). In addition, they often exhibit clear organizational patterns, such as cause-effect, compare-contrast, time-order, and enumeration (Vacca, 1986). Well-organized narratives usually contain predictable categories of information, including setting, beginning, reaction, attempt, outcome, and ending (Mandler & Johnson, 1977).

Text content influences a reader's understanding to the extent that the reader is familiar with that content. For example, Langer (1984) studied the influence of different levels and types of topical knowledge on what readers comprehend from text. Not unexpectedly, readers who possessed greater content knowledge comprehended better than readers with limited content knowledge.

Problems can occur when the text violates a reader's expectations for structure or when the content is particularly unfamiliar. When a text conflicts with a reader's expectations, it is referred to as an "inconsiderate text" (Armbruster, 1984). Inconsiderate texts may violate a reader's expectations in any number of ways, from omitting important components of a text's structure to inserting inappropriate tasks and presenting incoherent content. When the gap between what students know and what the text says is especially wide, instructional decisions must be made to reduce the gap and foster learning.

Textbooks can be used as part of the decisionmaking process. There is research to suggest that teachers can use the text to redirect students' attention to the topic when discussions go astray, to guide students to information they overlook, and to resolve disagreements. The text also can be used as a resource for dealing with students' unexpected responses and for getting students to think about what they are learning (Alvermann, 1984). Used carefully, the textbook can facilitate rather than replace thoughtful teacher decisions.

*Knowledge about instruction.* Ideally, instruction should lead to students' independent use of textbooks. According to Herber (1978), this goal can be accomplished if teachers learn to function as colearners – guiding students, yet encouraging them to contribute ideas. Recent research suggests that effective instruction is characterized by greater teacher direction early in instruction, with a gradual shift in emphasis to more teacher-student collaboration, and then by student independence (Langer, 1984). This approach is referred to as "scaffolding" (Vygotsky, 1978).

Instructional scaffolding requires teachers to make decisions about the degree of support they need to provide to help students learn from text. The instruction or scaffold is gradually withdrawn so that students can independently apply what they have learned. The goal is to provide appropriate support and encourage student ownership of the content and processes stressed during instruction. Within this framework, two types of strategies specifically help students develop independence in learning.

One type of strategy involves *prereading*. Teachers' prereading strategies usually focus on planning or preparation for instruction. Strategies for students are those a teacher uses during class to prepare students for what they are about to read. The most effective prereading strategies are those that continually give teachers information while activating students' prior knowledge and motivating them to learn the required skills. Langer's (1986) prereading plan (see Chapter 12) is an example of this kind of prereading strategy. Other strategies that perform the same functions include advance organizers, semantic maps, structured overviews, and brainstorming activities (Vacca, 1986).

Some prewriting strategies also prepare students for learning from textbooks (Britton, 1978). For example, students could conduct a miniresearch study on their own culture before learning about ancient or foreign cultures. The assignment could acquaint them with both the structure (research and report writing) and the content (culture) of what they are about to learn. Besides motivating and activating prior knowledge, these strategies tell the teacher what students are learning as a lesson progresses. The teacher can keep track of individual differences throughout a lesson and make necessary adjustments to help students build important concepts and function independently.

The other type of strategy used in scaffolding involves *guided reading*. Guidance strategies include the use of study guides and teachers' questions during discussions. Effective study guides help students use the text to construct meaning, rather than merely reproduce meaning (Herber, 1984). Considerable debate exists about the best ways to use guides to engage the reader with the text. Some of this debate centers on what types of tasks should appear on the guides. For example, some argue that questions should appear when students are learning from text. Others emphasize the use of statements. Herber (1978) suggests using statements in a lesson just prior to using questions. Students do not always know what is required in response to a question, and questions can lead to the teacher's ideas and not the student's. With statements, students are asked to decide whether the statements are supportable based on available evidence. Once students have demonstrated that they can identify relevant information, teachers can move to questions. This encourages greater student responsibility in interacting with the text. Greater responsibility and appropriate guidance foster students' awareness of what they can do to read independently.

How teachers use questions during discussion is also critical in helping students develop independence in learning from textbooks (Conley, 1986). An important issue concerns the effects of asking lower and higher order questions (Redfield & Rousseau, 1981; Rosenshine, 1976). Researchers have recently analyzed the effects of questions relative to students' grade levels and abilities. Their findings suggest that lower order or literal questions are superior for promoting basic skills among young children from low socioeconomic backgrounds. On the other hand, a diet of higher order, applied type questions is superior for developing thinking ability among average and above average students entering high school (Gall, 1984).

Despite clear support for asking high school students higher order questions, secondary teachers usually do not do so (Goodlad, 1984). In general, teachers tend to ask three lower order questions for each higher order question. However, these patterns vary among teachers. The aim of some teachers is to get students to respond with the right answers in the shortest time possible. Student references to page numbers or short one or two word answers are considered sufficient evidence that students have understood and are ready for the next question. Other teachers use questions to provide students with an opportunity to use their prior knowledge, to become immersed in the substance of the text, and to generate new ideas (Conley, 1986).

Knowing when to follow up on a previously asked question is governed in part by where the students are in the process of responding to that question. A summary of the general five step process students use to answer questions follows (Alvermann, 1986; Gall, 1984).

1. *Attending to the question.* Slower learning and younger students are most successful when responding to narrow questions that are easily answered (Rosenshine, 1976). Because literal questions hold the attention of these students, secondary teachers unfortunately can develop preferences for these lower order questions.
2. *Deciphering the question.* Once students have attended to the question, they must determine its meaning. Because teachers frequently compose questions on the spot, students may have difficulty interpreting what teachers are asking. Many times students will feign a lack of knowledge rather than request clarification. Repeated occurrences of this pattern in the context of higher order questions may eventually drive teachers toward the more easily phrased and less ambiguous literal question. Instead, teachers should work to clarify their original questions.
3. *Generating a covert response.* Once a question has been interpreted, the student must activate relevant prior knowledge or think about the question based on textbook information. Thinking about a question, or generating a

covert response, is a process that takes time. Most teachers wait for only one second before repeating the question or moving on to the next student (Rowe, 1974). If teachers would wait for several seconds, students would have a better chance of generating a higher level response. Instead, students are forced to respond to rapid fire questioning that often results in responses at lower cognitive levels than the original question intended (Mills et al., 1980).

4. *Generating an overt response.* Students who have gone through the different steps of the question answering process have no guarantee that they will be given an opportunity to respond. Depending on the teacher's bias in calling on students, some may get to respond only to literal questions while others may always be called on to answer questions requiring higher level thinking. Teachers should vary the response opportunities individual students receive during discussion.
5. *Revising the response.* Whether overtly given or covertly thought, a student's answer may be wholly acceptable to the teacher, partially acceptable, or even totally unacceptable. Teachers need to provide explanations in order to offer effective feedback and correct any student misconceptions. For higher order questions, effective feedback is often difficult to offer, since explanations are more complex at higher levels than those at lower levels. Again, the type of question and student response combine to create pressure to ask only lower order questions. Teachers need to give careful thought to the types of feedback they can offer for higher order questions.

Given the process of oral questions and responses, secondary teachers face a special challenge: how to incorporate higher order questions into their classroom discussions. Building an awareness of how and why students respond is one way teachers can begin to break the tendency to focus on factual level questions. Another way involves allowing adequate time for students to go through all of the processes necessary in forming a response. Additionally, teachers need to spend time offering feedback and explanations for why some responses are more appropriate than others. In following these recommendations, teachers can learn to ask questions that get students to generate ideas learned from text.

## Summary

Effective teacher decisions are those guided by knowledge about students, textbooks, and instruction. Good teacher decisions are based on a balanced consideration of all three factors. Teachers need to incorporate into their classroom decisions students' prior knowledge, ability, and motivation. It is important for teachers to show students how to use their own resources to read successfully. Textbooks should support rather than replace teacher decisions. Teachers can use textbooks as a tool in building bridges between what students know and what they need to know. Effective decisions about instruction help students move from depending on the teacher to learning to use textbooks independently. By phasing in greater sophistication and more student responsibility, teachers can help students make their own decisions about learning from secondary school textbooks.

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# 12

Donna E. Alvermann

# Metacognition

## What is metacognition? What are some metacognitive strategies for teaching students to be active readers?

Metacognition, according to Flavell (1976), refers to an awareness of, and an ability to capitalize on, one's own knowledge and thought processes as they are applied to some specific task. It is that general knowledge that guides readers in monitoring their comprehension processes through the selection and implementation of specific strategies to achieve some predetermined goal. Although the term metacognition is relatively new, the reading skills to which it refers have been discussed since the turn of the century (Dewey, 1910).

In an effort to separate two (not necessarily independent) phenomena associated with metacognition, Baker and Brown (1984) divided metacognitive activities into different clusters. The first cluster is concerned with the learner's awareness of any incompatibility between available knowledge and the complexity of the task at hand, and the second cluster is concerned with the active self-monitoring of cognitive processes while reading. Deployment of appropriate strategies is directly related to metacognitive awareness of limitations and effective monitoring. According to Baker and Brown, the choice of strategies will vary depending on whether the goal is to read for meaning (comprehension) or for remembering (studying). Reading for meaning generally includes the metacognitive strategy of comprehension monitoring, while reading for remembering usually includes organizing important information in preparation for a test (e.g., self-checking understanding of the material or developing an effective repertoire of study strategies).

*Reading for Meaning*

Thorndike (1917, p. 330), in discussing the results of his study of reading as reasoning, suggested that comprehension difficulties may arise if the reader fails "to treat the responses made [to incoming information from text] as provisional and to inspect, welcome, and reject them as they appear." In effect, failure to test understanding of what is read while reading is a behavior reflective of poor comprehension monitoring.

Theorists have assumed that there are certain essential and definable skills, which, when translated into pedagogical strategies, can induce active comprehension monitoring in less competent readers. With the current emphasis on teacher led direct instruction, it is not uncommon to find in professional journals numerous accounts of successful attempts at teaching students a variety of metacognitive strategies (Baumann, 1984; Slater, Graves, & Piche, 1985). The following strategies are representative of that larger body of literature.

*A Prereading Plan (PReP).* PReP is a strategy for helping the reader anticipate what prior knowledge or background information will be needed to understand new information. This diagnostic strategy is particularly helpful to teachers who want to know what kind of a match they can expect between their students' background knowledge and the knowledge to be presented in a textbook assignment. Langer, who developed the PReP activity, suggests following this three step plan:

1. *Initial associations with the concept.* In this first phase the teacher says, "Tell anything that comes to mind when..." (e.g., you hear the word *Congress*). As each student tells what ideas initially came to mind, the teacher jots each response on the board. During this phase the students have their first opportunity to find associations between the key concept and their prior knowledge. When this activity was carried out in a junior high school class, one student, Bill, said "important people." Another student, Danette, said "Washington, D.C."
2. *Reflections on initial associations.* During the second phase of the PReP the students are asked, "What made you

think of…[the response given by a student]? This phase helps students develop awareness of their network of associations. They also have opportunity to listen to one another's explanations, to interact, and to become aware of their changing ideas. Through this procedure they may weigh, reject, accept, revise, and integrate some of the ideas that came to mind. When Bill was asked what made him think of important people, he said, "I saw them in the newspaper." When Danette was asked what made her think of Washington, D.C., she said, "Congress takes place there."

3. *Reformulation of knowledge.* In this phase the teacher says, "Based on our discussion and before we read the text, have you any new ideas about…[e.g., Congress]?" This phase allows students to verbalize associations that have been elaborated or changed through the discussion. Because they have had a chance to probe their memories to elaborate their prior knowledge, the responses elicited during the third phase are often more refined than those from phase one. This time Bill said, "lawmakers of America" and Danette said "U.S. government part that makes the laws" (Langer, 1982, p. 154 ).

Although research exists that suggests PREP is an effective strategy for raising available background knowledge in students as young as sixth graders, the strategy is probably most valuable for its diagnostic information to teachers (Langer, 1984). PREP can assist teachers in determining whether (and for whom) direct concept instruction is necessary prior to making a textbook assignment. For example, students who have demonstrated that they can draw analogies or make conceptual links between what they know and what is new are probably ready to read the assignment. On the other hand, students who have very little background knowledge are candidates for prereading concept instruction. That is, they need the teacher's help to see relationships between what they know and the new material to be presented in the text. It is debatable whether PREP is a metacognitive strategy students will transfer from one setting to another. Currently, the strategy is best suited to teacher directed lessons involving students in groups of ten or fewer.

*Lookback or rereading strategy.* When a reader uses compensatory or fix-up comprehension strategies during reading, we infer that the reader recognizes meaning has been disrupted or lost and is in the process of trying to regain it. We know that older and better readers spontaneously use the lookback or rereading strategy when they recognize that a comprehension problem exists (Alessi, Anderson, and Goetz, 1979; Garner & Reis, 1981). Alessi and his colleagues reported a facilitative effect for computer manipulated lookbacks on college freshmen's comprehension of text. In their study, students in the lookback group who responded incorrectly to questions inserted in an artificially constructed text on physiological psychology were automatically branched back, via computer, to the appropriate segment of text where the correct answer could be found. Since these results were obtained under laboratory conditions and by using artificially constructed text with mature readers, three important questions remained: Would using naturally occurring text produce the same results? Assuming readers can learn to monitor their own comprehension failures, would it be feasible to expect that high school students could be trained to look back to the correct places on their own? Would these findings generalize to both good and poor comprehenders?

These questions were addressed in a study by Alvermann and Van Arnam (1984) in which they constructed graphic organizers to represent the author's organizational plan for two naturally occurring passages from a history text. The graphic organizers, sometimes referred to as structured overviews (see Chapter 5, Figure 1), were only partially complete in that certain key terms were purposely omitted and replaced by slots or uniformly drawn rectangles. Tenth grade history students were expected to use their content area textbooks to find the information that would correctly fill the empty slots. In effect, the graphic organizer was used as a textbook learning aid for inducing students to look back in their texts when the teacher asked them questions they could not answer from memory. The graphic organizer was described to the students as a road map that would help them find the missing information in the shortest time. The low ability comprehenders, but not the high ability comprehenders, were helped by the graphic organizer. This finding of differential effects for low ability readers and high ability readers is common among several comprehension monitoring instructional studies. Its implication for classroom practice is that attempting to teach good readers new metacognitive strategies may be unnecessary and, in some cases, may even interfere with previously learned strategies. Poorer readers, on the other hand, typically do not have (or at least do not use) task specific strategies and are helped by adjunct aids that induce these strategies.

Good comprehenders consistently demonstrate more spontaneous lookback behaviors than do poorer comprehenders (Garner, 1980; Garner & Reis, 1981). Garner and Kraus (1981, p. 12) concluded that "It...seems important to get on with the business of attempting to generate appropriate interventions to assist upper grade poor comprehenders in improving their monitoring facility." One such intervention is a text lookback checklist that grew out of a study by Garner and her colleagues (1984). The checklist helps students remember why, when, and where they should look back in previously read material. It is best used following a three day training sequence that is described in an article by Reis and Leone (1985). Although the training sequence is too detailed to include here, the text lookbook checklist is provided in the Figure.

### Text Lookback Checklist

1. *Why should I look back?*

   I will look back to pages I have read so I can locate information I don't remember.

2. *When should I look back?*

   I will look back when I think the questions ask about what the author or article said.

   I will not look back when the questions ask me what I think.

3. *Where should I look?*

   I will scan the article and look for key words and phrases.

   I will then reread sentences and entire paragraphs if necessary (Reis & Leone, 1985, p. 418).

*Self-questioning strategies.* A variety of self-questioning strategies exist for helping students become active readers and thus overcome some of the obstacles to comprehension. One particularly appealing strategy, Question-Answer-Relationships (QARS), for helping students ask questions about what they read, *as they read*, was developed by Raphael and Pearson (1982) for use in an instructional training study involving fourth, fifth, and eighth grade students. Specifically, the students were taught how to judge whether questions could be answered from the text or whether the responses to the questions had to be generated by the students. For instance, textually explicit questions were those that could be answered directly from the text. In dealing with these questions, students were taught to ask, "Can the answer be found right there?" By comparison, "Can the answer be found only when I think and search?" was the question they were taught to ask in identifying inferences drawn from two or more statements in the text. "Do I have enough information to answer the question on my own?" was the question students were taught to ask when the answer they were seeking could not be found in the text but could be formulated based on their past experiences and background knowledge. Raphael and Pearson found that students trained in the self-questioning strategy did better than untrained students in identifying the question types and giving correct answers. Thus, both their awareness of the relationship between questions and answers and their comprehension improved.

Another self-questioning strategy is SQ3R, which stands for survey, question, read, recite, and review (Robinson, 1961). SQ3R is a student centered textbook study system, like the Question-Answer-Relationship strategy developed by Raphael and Pearson. SQ3R differs from the Question-Answer-Relationship strategy in two important ways. One, SQ3R assumes that students already have learned how to answer textually explicit and textually implicit questions; thus, it is an appropriate follow up strategy to the one recommended by Raphael and Pearson. Two, SQ3R is a linear system; that is, the steps of surveying, questioning, reading, reciting, and reviewing must be followed in order from the first to the last.

Students who use this system have been taught first to *survey* a reading assignment to get a general idea of what the passages are about. Then they turn the headings and subheadings (often set off in boldface print) into *questions*. Next they *read* to answer their questions. They *recite* (either aloud or by taking notes) their answers to the questions. Finally, students *review* their answers by rereading parts of the text or their notes to verify that they have remembered the information correctly. Although SQ3R has been called "the most widely advocated and emulated textbook study system" (Stahl & Henk, 1986, p. 366), Fry (1972) warned that usually students will not learn how to use it, nor will they continue to use it, if teachers do not involve them directly in the learning process. That is, to be effective as a metacognitive self-questioning strategy, SQ3R must be taught by methods other than the lecture method alone. Stahl and Henk (1985) describe in detail three methods shown to be effective in teaching students to use SQ3R. These methods involve teaching the individual steps of the system before integrating them; teaching the system as a whole but only in response to a student demonstrated need for such a system; and teaching the system as a whole several times a week and then giving students independent practice activities in using SQ3R.

A third self-questioning strategy, one that has gained widespread recognition because of its demonstrated transferability, is Reciprocal Teaching of comprehension monitoring strategies (Palincsar & Brown, 1985). Based partially on Manzo's ReQuest procedure (1969), Reciprocal Teaching makes use of four separate cognitive activities: summarizing, clarifying, questioning, and predicting. Each activity is used in the context of a real reading situation. For example, summarizing is used as a self-review activity; it is used to state to yourself, the teacher, or to a group what was understood from a particular reading. Clarifying occurs only when the student's interpretation of the text is unclear or when the text itself is unclear. Questioning is not solely a teacher directed activity. Students also are encouraged to generate questions that might appear on a test or that arise naturally in the summarization activity described. Finally, predicting is an activity designed to motivate students to engage actively in the comprehension of the next portion of the assigned reading.

### *Reading for Remembering*

Increasingly, in reading research literature, studies appear suggesting that students who generate outlines or take notes while reading (or shortly after reading) textbook material enhance their retention of that material. In a study of ninth graders' ability to comprehend and recall eight passages from a history textbook, Slater, Graves, and Piche (1985) found that students who filled in an outline grid while reading a text passage accompanied by a structural organizer remembered more of what they had read. However, when these same students had access to the structural organizer without the outline grid, their comprehension was facilitated but their recall of the information was not. The technique Slater and his colleagues used did three things to help students be aware of and remember what they read: (1) it gave students advance warning about the type of text structure they would encounter; (2) it told students how to use that structure (e.g., cause-effect in locating the causes and their effects), as well as the related topics and supporting details; and (3) it provided an outline grid for students to complete as they read. The cause-effect structural organizer and its accompanying outline grid used by Slater and his colleagues (pp. 192-193) are provided here.

> Cause-Effect Structural Organizer
>
> When reading nonfictional material, understanding the author's organization has three important advantages. It provides you with clues to remember *much more* of what you read. It helps you recall more of the *major ideas* in what you read, and it helps you to remember all of this information for a *longer* period of time.
>
> Authors can organize their writing in several ways. One way of organizing a passage is to list causes and their effects. A cause and effect passage consists of a number of causes and a number of effects with supporting information related to each cause and effect. Additionally, a cause and effect passage may include related topics and supporting information for these topics.
>
> For example, you might read a passage about the causes and effects of the increase in fuel costs in the United States. A cause might be the greater demand for fuel. Supporting information about the greater demand for fuel might

include (1) details about how much the demand for fuel has increased up to the present and (2) details about how much the demand for fuel will increase in the future.

An effect might be increased fuel costs. Supporting information about increased fuel costs might include (1) details about how much fuel costs have increased and (2) details about how this increase in fuel costs reduces the distance people can afford to travel.

A related topic might be that of how fuel increases are forecast. Supporting information about how fuel increases are forecast might include (1) details about how fuel increases are forecast for air transportation and (2) details about how fuel increases are forecast for ground transportation.

[The following outline shows the organization of the Rising Fuel Costs passage just described.]

### Rising Fuel Costs in the United States

1. Cause: Greater demand for fuel
   Support: How much the demand for fuel has increased up to the present
   Support: How much the demand for fuel will increase in the future
2. Effect: Increased fuel costs
   Support: How much fuel costs have increased
   Support: How this increase in fuel costs reduces the distance people can afford to travel
3. Related Topic: How fuel increases are forecast
   Support: Details about how fuel increases are forecast for air transportation
   Support: Details about how fuel increases are forecast for ground transportation

[Following is the set of directions for using the outline grid that Slater et al. provided the subjects in their study.]

The passage you will read consists of a cause, effects, and related topics. It consists of 1 cause with supporting information, 3 effects with supporting information, and 9 related topics with supporting information.

As you read the passage, look for the cause, the effects, the related topics, and the supporting information. Causes, effects, or related topics are usually found in the first sentence of each paragraph, and supporting information...is usually found in the remaining sentences in a paragraph.

Starting on the next page, you will find a blank outline. Following the outline, there is a prose passage. As you read the passage, write down in phrases or sentences the cause, the effects, and the related topics of the passage and the supporting information on the outline. Do this as you are reading, not after you have finished reading. Every blank on the outline represents a sentence in the passage. The order of the blanks on the outline is the same as the order of the sentences in the passage. Note that you must flip back and forth from the passage to the outline as you are filling out the outline.

Gold in California Outline Grid

1. Cause: ______________________________
   Support: ______________________________
   Support: ______________________________
   Support: ______________________________
   Support: ______________________________
2. Related Topic: ______________________________
   Support: ______________________________
   Support: ______________________________
3. Effect: ______________________________
   Support: ______________________________
   Support: ______________________________
   Support: ______________________________

Notetaking has been shown to increase students' ability to remember what they have read (Anderson & Armbruster, 1984). According to Sanacore (1984), students who use study strategies like notetaking are metacognitively aware of the processes involved in studying to remember. They know from past experiences that the completeness of their notes is related to achievement; however, research shows that students typically are poor notetakers. College freshmen may record as little as 11 percent of the important information; moreover, upper level A students may record only 62 percent of the key ideas from a lecture (Hartley & Marshall, 1974; Locke, 1977).

Experimental studies comparing facilitative effects on remembering by students who review their own notes only versus students who listen to a lecture and then review notes provided by the instructor, favor the latter (Kierwa, 1985). However, reviewing the instructor's notes may not be the best procedure for students to use. According to other research, students who review both their own notes and the instructor's notes remember more than do students who review one or the other (Annis & Davis, 1975).

## What differences exist between proficient and less proficient readers in their use of metacognitive strategies?

Becoming a successful reader – one who is able to learn independently from text – requires proficiency in monitoring for comprehension and remembering. These two self-regulatory mechanisms are found more often in the older and better reader's repertoire of skills than in the younger and less able reader's repertoire. Also, readers of any age and ability level are more likely to take responsibility for applying these skills when faced with tasks that are neither too difficult nor too easy (Wagoner, 1983).

Researchers have studied a number of metacognitive activities crucial to comprehending and remembering text. Ten of the activities are listed with brief summaries of the research findings pertinent to each activity (Baker & Brown, 1984).

1. Generally, advanced readers understand the demands of different tasks and are able to discriminate among those demands in selecting an approach to complete a specific task. They are also able to judge whether their knowledge level will permit them to successfully complete a reading task.
2. Good readers are capable of adjusting their reading behaviors to suit their purpose for reading (e.g., they skim

for the gist of a selection but read carefully for the details). Poor readers do not exhibit this flexibility.

3. The focusing of attention on relevant information in text increases with age. Secondary school students are better at identifying what is important than are elementary school students.
4. At the secondary school level, better readers spend more time studying less logical passages than do poorer readers. The fact that poorer readers do not spontaneously monitor a passage for its logical structure does not mean they are *incapable* of doing so with relevant instruction.
5. Poor readers at the high school level may have the background knowledge needed to understand a text but lack an awareness that information learned in other classes and outside of formal schooling can help them interpret what they read. Despite their ability level, many readers unquestioningly accept information presented in their textbooks.
6. Good comprehenders are flexible in their use of the three cue systems (meaning cues, word order cues, and letter-sound association cues) of the English language that signal inconsistent information in text. Less able readers either fail to notice such inconsistencies or concentrate on the difficult words and pay little attention to whether the text as a whole is making sense.
7. As might be expected, older students are more adept at spotting inconsistencies in text than are younger students. They know when a text is ambiguous, when it does not present sufficient information, or when it contains conflicting ideas. However, even junior and senior high school readers report inconsistencies in relation to their own prior knowledge rather than to the logical inconsistencies within the text.
8. Knowing when you have failed to understand a portion of text is only part of the comprehension monitoring phase; you also must know what strategies to apply when comprehension is disrupted. One of the simplest ways to re-

trieve lost meaning is to reread for clarification. Another way is to continue reading, with the expectation that the author will soon provide the needed information. Finally, comprehension failures may be resolved by using prior knowledge and background experiences to draw inferences about what the author meant to convey.

9. As in so many of the activities listed, developmental differences play a major role in students' ability to decide whether their goals for reading a particular text have been met or whether they have studied sufficiently to pass a test on the information read. Rather than continuing secondary school students' reliance on external forces (e.g., parents, teachers) to tell them whether they have met their goals, they need instruction in how to assess their own level of understanding. This may be accomplished by showing students how to engage in self-questioning and helping them perfect their ability to ask the right questions.
10. Strategy training has been shown to increase comprehension for less skilled readers. One study found no difference in comprehension between skilled and less skilled readers, when the less skilled readers received strategy training in the use of story parts as an aid to comprehending (Short & Ryan, 1984).

The research literature suggests that developmental and proficiency differences among students appear in response to matters other than those related to knowledge about what strategies to apply (Wagoner, 1983). DiVesta, Hayward, and Orlando (1979), for instance, found that middle school and high school students selected fix-up strategies on the basis of their confidence in their own ability to derive meaning from print. Less mature readers were more likely to attribute comprehension failures to their own inabilities or shortcomings.

In another study, junior high students who were all within the average stanines on a reading achievement test were asked to rank themselves as being high or low in their ability to complete an essay or remember information about what they had read. Alvermann and

Ratekin (1982) found that when these students' scores on an essay and free recall measure were adjusted for prior reading achievement, the self-perceived high proficiency group performed significantly better than the self-perceived low proficiency group. There was also some evidence to suggest that students' self-perceptions affected their choice of strategic activities. That is, students who thought of themselves as having little or no ability to deal with the criterial tasks reported reading carefully and slowly more often than students who rated themselves as having high proficiency in dealing with those tasks.

## Summary

Metacognition refers to an awareness of one's own knowledge and thought processes in terms of a specific task. Metacognition is what readers know about themselves, about the text they are to read, about the requirements of the task they must complete to provide evidence of their learning, and about whether they have the necessary strategic knowledge to complete the task successfully.

Metacognitive strategies in reading generally divide along the imaginary line that separates reading for meaning (comprehension) from reading for remembering (studying). Reading for meaning includes comprehension monitoring strategies such as PREP, lookbacks, and self-questioning. Reading for remembering includes (among many other self-monitoring activities) strategies for organizing important information such as outlining and notetaking.

Students' awareness of comprehension problems and their success in applying fix-up strategies are known to vary across age and ability level. Although differences in age and ability level have been shown to influence how effectively one uses metacognitive strategies, those differences may not be as limiting as once thought. The fact that less able readers do not spontaneously apply a metacognitive strategy, such as self-questioning, does not mean they are incapable of doing so with relevant instruction.

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# PART FIVE
# Knowing Who

# 13

Pamela B. Lutz

# Staff Development

## How can content area teachers be energized to respond to the reading needs of students?

While this question can be interpreted to have different meanings, our answer serves as a way to talk about staff development research and how that research can be used by a variety of school people to help all classroom teachers respond to their students' reading needs.

To energize content area people to respond to the reading needs of students we must help them understand what teaching reading in the content areas means and then equip them with the skills to do the job. Content area teachers see themselves as specialists in particular disciplines. They have chosen to be trained in subjects that interest them and that they want their students to learn (Herber & Nelson-Herber, 1984). Reading instruction is not their area of specialty; they view teaching reading as someone else's responsibility. Why should they be interested, then, in knowing how to respond to their students' reading needs? No content area escapes the need for reading skills; most course content is presented in written form, usually a textbook. If the teacher wants to get information from the printed page to students, students must know how to learn from their reading – not just how to recognize words but how to understand the words they read.

Nobody likes to be expected to do something they are not comfortable doing. Content area teachers are no different. However, given the opportunity for study and practice, they can help their students improve their reading. An effective inservice education program can make learning opportunities available. In fact, it is difficult to imagine a successful content area reading program without a staff development component. High school teachers' lack of formal training in reading instruction requires that they learn how to help their students read after they've completed their preservice training.

Teachers are not the only personnel who can benefit from a staff development program. Principals or superintendents concerned about low reading scores on achievement tests can use the information that follows as they work with a reading specialist to develop an inservice program for content area teachers. Reading specialists who have been asked to devise a plan of inservice can use the chapter as a guide for how to plan and conduct a series of effective inservice sessions. Their expertise in reading, along with materials from other chapters in this book, will help them determine what to cover in the sessions. Content area teachers, frustrated by their students' inability to understand difficult concepts in their textbooks, can use this chapter. Many times, content teachers would like to help their students, but hate to give up classroom time to teach reading skills. Besides, they don't know how to teach reading. They have had little or no formal training that would cause them to think differently (Farrell & Cirrincione, 1984; Siedow, 1985). With the information in this chapter, content teachers can be the catalyst for change in their school. They can begin the process that will energize all teachers to help their students learn from text.

This chapter will first review who must be involved in a content area reading program. Discussion then will focus on the research in staff development for information about how to organize and implement an effective inservice program.

## What roles do the principal, the reading teacher/specialist, and the content area teacher play in the implementation of a secondary school reading program?

Each of these people is critically important to the success of a content area reading program. The operation of a secondary school reading program like the one envisioned in this book and by others

(Herber, 1978; Nelson & Herber, 1982; Singer & Donlan, 1985) requires substantial change from what now exists in many schools. Our focus is not on remedial instruction and pull out programs for students performing below expected levels. Instead, the program suggested here focuses on all students and is taught by all teachers. The content of the program is determined by the individual course curriculum; the skills taught are those essential to understanding the material (Herber, 1978). Students needing additional help attend special classes that operate as a supplement to the basic program. A program of this kind necessitates the involvement of administrators, reading specialists, and content area teachers; staff development is a central part of the total effort (Nelson & Herber, 1982).

The support of school administrators – both superintendents and principals – is crucial to the success of a content area reading program. Administrators control two factors necessary for program success: staff time and school budgets. Decisions made in these two areas affect the operation of the program. Teachers must be given time to interact with one another and to develop or adapt curriculum materials as they study different teaching strategies (Nelson & Herber, 1982). This time costs money, but the payoff is great. Studies show that administrative encouragement of inservice training often corresponds with higher student achievement (Educational Research Service, 1983).

Principals are especially important in the success of the program. Their knowledge of a school's staff and its students, along with their role in the allocation of resources, gives them primary responsibility for staff development and improvement (Lipham, Rankin, & Hoeh, 1985). Principals in successful schools give priority "to classroom carryover from inservice training" and to exchanges of ideas among staff (Educational Research Service, 1983, p. 29). Nelson and Herber (1982) contend that providing nurturing conditions and facilitating personnel are two management challenges faced by those who operate successful content area reading programs.

Reading specialists play quite a different role in a content area program. More and more, reading specialists and supervisors are being asked by content area teachers to provide information about the teaching of reading (Dupuis, 1984). The reading specialist can serve as a resource to content area teachers – providing inservice training, developing materials, and consulting (Bean & Wilson, 1981). Performing as a resource for fellow teachers is a different role for reading specialists. It requires them to use information and skills that traditionally are not a part of their education (Siedow, 1985). Little is known about what the reading specialist does in this new role. Bean and Wilson (1981, p. 1) offer a description of reading specialists that incorporates the resource role:

> The functions of the specialists might be viewed on a continuum. Remedial reading teachers at one end of the continuum have little opportunity to interact with teachers....Conversely, reading specialists who function as resource people may never work with children. These specialists spend much of their time on both informal and formal staff development. Between these extremes, one may find...specialists assuming resource roles as well as instructional ones.

The reading specialist serving as a resource person helps content area teachers apply to their curriculum materials the reading skills related to their subject. Nelson and Herber (1982) say this involves:

- appropriate use of information resources,
- demonstrations of instructional strategies,
- observations of teachers' demonstrations,
- analysis of and advice on teachers' construction of instructional materials,
- participation in curriculum revision, and
- participation in program evaluation.

Finally, a content area reading program cannot be successful without supportive and active classroom teachers. The program will not work if teachers do not attend training sessions, if they do not apply the new information to their own course content, if they do not practice the strategies and get feedback from their colleagues, and if they do not add the strategies to the instructional repertoire they use in their own classrooms. A series of inservice sessions designed to give teachers the opportunity to learn about, attempt, and modify new practices can result in the successful infusion of reading instruction in content area classes (Siedow, 1985).

## What are some ways of organizing and implementing inservice programs on secondary school reading?

One thing to learn from the research about how to change school practices and teacher behaviors is that change is a process, not an event. Yet, findings consistently show that staff development within school districts is frequently "a hodgepodge of incompatible workshops and courses" (McLaughlin & Berman, 1977, p. 191). These fragmented, piecemeal efforts are "generally ineffective and poorly conceived, lacking a conceptual framework" (Wood, Thompson, & Russell, 1981, p. 60). Many staff development efforts continue to be little more than one shot, day long workshops (Boyer, 1983).

A systemmatic, long term program of staff development is needed if significant improvement in teacher behaviors is to take place (Cole, 1979; Vacca, 1981; Wood et al., 1981). Until schools begin thinking of staff development in these terms and begin operating systems of staff development, one shot, unrelated programs will be the norm (Wood et al.).

Before reviewing ways of organizing and implementing a staff development program, think of an inservice session you attended that you felt was particularly useful. What three things about that experience impressed you? Now think of a session you remember feeling was a complete waste of time. What three things needed improvement? Remember these two different training experiences as you read this chapter. Mentally compare your own experiences with the characteristics of effective training supported by research.

### *Models for Long Term Efforts*

While research literature describes various models that can be used as a framework for a schoolwide inservice plan (Dupuis, Askov, & Lee, 1979; Siedow, 1985; Sparks et al., 1985; Vacca, 1981; Wood, Thompson, & Russell, 1981), only two will be reviewed here. Schools located near a college or university may want to investigate the possibility of a joint effort, where university staff can help design and implement an inservice plan based on these or other models. Such programs typically combine the resources of the university and the school to encourage teacher-directed improvement efforts (Dupuis, Askov, & Lee, 1979; Sparks, 1984). University faculties are good places to look for presenters or session leaders in a specialized area.

Table 1 presents features of two staff development models. While the two models vary in the number of steps or phases, they share some common elements that are associated with effective staff development efforts. The two models:

- base inservice sessions on assessed needs;
- occur in phases, with actual training following a period of assessment and planning;
- not only evaluate the total program, but collect evaluation data throughout and use the data in program operation;
- have the flexibility to respond to immediate or changing concerns;
- involve teachers in all phases;
- include followup activities;
- view the school as the locus of change; and
- focus on changing teacher, not student, behaviors (Hutson, 1981; Korinek, Schmid, & McAdams, 1985; Siedow, 1985).

Staff development programs are typically thought of as training sessions. Table 1 demonstrates that the actual training sessions constitute only one phase of a carefully planned and evaluated program of inservice.

During steps leading to the training, school faculties develop motivation and commitment to the program; assess needs and attitudes of teachers, supervisors, and administrators; and establish goals of the inservice program. Discussions of how to develop and use checklists and questionnaires in needs assessment are beyond the scope of this chapter. However, examples specific to content area reading are available (Siedow, 1985; Vacca, 1981). This planning stage is important to the program's success; during this time schools

## Table 1
## Two Staff Development Program Models*

| | Model A | Model B |
|---|---|---|
| Steps Leading to Training | **Readiness**<br>Mobilize support<br>Develop generalized, written 4-5 year plan, including goals<br>**Planning**<br>Establish inservice objectives congruent with goals<br>Identify available resources<br>Plan inservice activities | **Design and Planning**<br>Assess needs, attitudes, interests, and resources<br>Determine program goals and objectives |
| Actual Training | **Training**<br>Conduct inservice plan<br>Collect formative and summative evaluation data | **Implementation**<br>Conduct the program |
| Steps Following Training | **Implementation**<br>Provide followup assistance to help teachers use new skills<br>Give administrative support and recognition<br>Collect evaluation data on extent of use in classroom<br>**Maintenance**<br>Monitor continuously<br>Generate new data and needs to use in repeat of cycle | **Evaluation**<br>Evaluate sessions themselves<br>Evaluate effect of process on classroom practice<br>Evaluate effect of program on student attitudes and performance |

*Model A - Wood, Thompson, & Russell, 1981
Model B - Vacca, 1981

can develop a climate receptive to growth and change. In fact, this climate is crucial to any successful school improvement effort. Joyce and his colleagues (1983, p. 65) contend – and research by others confirms – that "unless a local school environment is congenial to sensible innovation, even minor school improvement objectives, whether locally or externally generated, will have hard sledding." An organized and formal planning phase is frequently forgotten in the design of staff development programs (Wood et al., 1981).

The steps following inservice sessions are also important. Both models recommend looking at what happens in the classroom to see if teacher practices have changed. Evaluation of the sessions themselves is also recommended.

Any staff development program that follows one of these models will be a long term effort. The point of describing program models, instead of limiting ourselves to actual training sessions, is to stress the necessity of the school's long term commitment to change (Vacca, 1981). There is support for the belief that inservice program designs *should* be complex and ambitious. Such projects are less likely to be trivial and routine and to suffer from we've-tried-that-before complaints, and are more likely to have an effect on practice (Hutson, 1981).

### *Characteristics of Effective Training*

The heart of the inservice plan lies in the actual training sessions. How can research help to make inservice sessions more effective?

Critical to the success of the training sessions is a careful match between what you want to achieve and how you go about it. Inservice sessions typically are designed to do one of three things: give information, develop skills, or change behaviors (Korinek, Schmid, & McAdams, 1985). A problem exists when there is a mismatch between the goals of inservice and the type of session presented. If the goal is to get content area teachers to attend to their students' reading needs – to change teachers' current behaviors – a program that relies solely on information transmission is inappropriate. Increasing teachers' knowledge of a practice will not cause them to change their behaviors. So care must be taken to ensure that the goals of the particular inservice session are clear and specific and the type of session appropriate for achieving those goals.

Characteristics of the three types of inservice can be examined closely. Korinek, Schmid, and McAdams (1985) reviewed the literature to determine the most frequently used types of inservice. From more than 100 reports, they selected 17 as adequate for meeting the purpose of their survey. Table 2 compares the features of the three inservice types they identified.

Type 1, *information transmission*, is designed to do little more than increase knowledge about a particular subject. However, it does have its uses. Many times, as teachers are learning a new approach or instructional technique, a presentation of theory can help them understand its underlying rationale or conceptual base (Joyce & Showers, 1980; Joyce, Hersh, & McKibbon, 1983). Lectures and discussions are among the most common forms of this type of inservice. The problem associated with information transmission is that it is frequently used to the exclusion of other types more appropriate to the goals of the training. Inservice sessions of this type appear to be both the most common and the most unpopular with teachers (Korinek, Schmid, & McAdams, 1985).

Type 2, *skill acquisition*, is appropriate for strengthening old skills or learning new ones. The ability to demonstrate the skill does not ensure that a teacher's classroom behavior will change.

Type 3, *behavior change*, includes sessions from both Type 1 and Type 2. It is different from Type 2 in its explicit commitment to changing behavior. Each part of the program is built on careful assessment, clear objectives, observation, and record keeping. It is the most costly, time consuming, commitment laden, and least used of the three types. It is also the only one that provides "a reasonable chance of changing teacher practice" (Korinek, Schmid, & McAdams, 1985, p. 36).

Joyce and Showers (1980, 1982, 1983) would say that onsite coaching is also necessary before a change in teaching behaviors will occur. They have identified four components of training that "virtually guarantee the successful implementation of almost any approach" (Joyce & Showers, 1980; 1982, p. 5). The components include theory, demonstration by others, practice and feedback, and coaching.

## Table 2
## Features of Three Inservice Education Types

| Feature | Inservice Type<br>1. Information Transmission | <br>2. Skill Acquisition | <br>3. Behavior Change |
|---|---|---|---|
| Time Frame | 1-3 hours per session | Multiple sessions of 2-3 hours | Multiple sessions of varying lengths |
| Location | Available meeting or conference sites | Usually school based; occasionally conference sites | School based home, school or district |
| Content | Generally unrelated, self-contained, independent topics | Most presentations part of sequence, some independent topics | Interdependent presentations linked by common purpose |
| Audience Size | No upper limit | Determined by ratio of session leaders to participants | No upper limit |
| Presentation Style | Lecture, demonstration or panel with passive audience participation | Demonstration, practice, feedback, active participation | All styles, both active and passive participation |
| Evaluation | Rating of usefulness or enjoyability | Demonstration of the skill | Measurement of change in teaching behavior and degree to which project objectives met |

Korinek, Schmid, & McAdams, 1985
© Used with permission of the *Journal of Research and Development in Education*.

Coaching is the key to the effective transfer of training from the workshop to the classroom. Combinations of the first three training components – if they are high quality – are sufficient to enable most teachers to develop a new skill. Unfortunately, development of a skill does not ensure its use in the classroom. In their studies of how and if people transfer training from the workshop to the workplace, Joyce and Showers (1982) conclude that, with coaching, most teachers will begin to use newly acquired skills in their classrooms.

What is coaching? Coaching is defined as teams of teachers working together to study new skills and polish old ones. Coaches provide companionship, give technical feedback, help determine appropriate use of the new skill, help to gauge student response to the new technique, and provide emotional support as teachers try new skills in front of students (Joyce & Showers, 1982, 1983). In early reports, Joyce and Showers were unable to provide data to support their notion that teams of peers would be the most practical choice as coaches. More recent research, however, supports that view (Showers, 1984; Sparks, 1984, 1986).

Table 3 shows the percentage of teachers who will use new skills in the classroom after exposure to the different training components identified by Joyce and Showers. A presentation of theory, or an information transmission inservice experience, results in classroom application for relatively few teachers; "perhaps as few as 10 percent" (Joyce, Hersh, & McKibbon, 1983, p. 143). The percentage increases as other components are added, but look at the dramatic difference coaching makes. With coaching, 75 percent or more of the teachers will take the new skill back to the classroom. None of the training components alone is powerful enough to bring about classroom behavior changes for most teachers. Coaching without an understanding of the underlying theory, opportunities to observe others in demonstrations, and occasions to practice with feedback will accomplish little (Joyce & Showers, 1982; Joyce, Hersh, & McKibbon, 1983). When the components are combined, teachers acquire and use new skills (Joyce & Showers, 1980, 1982).

One final point: Learning to use a new skill frequently creates discomfort. Trying out a new teaching behavior during a training session is different from using it in the classroom. For one thing, the training environment is controlled; students aren't there. Practicing a new skill in simulated conditions before small groups of students is recommended as part of a successful training program. Joyce and

### Table 3
### Training Components and Levels of Impact*

| Training Components | Levels of Impact<br>Knowledge Mastery | <br>Skill Acquisition | <br>Classroom Application | Percentage of Implementation in the Classroom* |
|---|---|---|---|---|
| Theory | middle to high | low | very low | ≤ 10% |
| Theory plus demonstration | high | low to middle | very low | 10% |
| Theory, demonstration, plus practice and feedback | high | high | very low | ≤ 20% |
| Theory, demonstration, practice, feedback, plus coaching for application | high | high | high | ≤ 75% |

* Joyce, Hersh, & McKibbon, 1983.

Showers also discuss a second stage of learning that is necessary after a new skill has been acquired during training. They call this the transfer of training; it occurs when teachers try to use the new skill in the classroom. It is risky, and teachers frequently feel awkward. Classroom conditions require the teacher to know how to adapt the new skill to students, apply it to subject matter, modify or create instructional materials, organize students to use it, and blend it with other instructional approaches. Behaviors the teacher already practices with some degree of fluency may actually get in the way of using the new skill (Joyce & Showers, 1982, 1983). Until teachers feel as comfortable using the new skill as they did using their old ones, they will experience some degree of discomfort. The more disruptive the new skill is to existing teaching behaviors, the greater the discomfort. Teachers can be helped through this period of dis-

## Table 4
## Characteristics of and Strategies for Effective Inservice Leaders*

| Content Delivery | Personal Influence | Professional Competence | Structural Arrangement |
|---|---|---|---|
| Involves participants actively in the topic | Displays a positive attitude and a pleasant disposition | Is well informed and well organized | Arranges to assess the needs of the group in advance |
| use brainstorming<br>encourage open-ended discussion<br>facilitate group interaction | interact with teachers prior to presentations (know people's names)<br>keep teachers on task during small group work<br>listen for and respond to reactions throughout and after a session<br>maintain a sense of humor | know why and how to teach reading in content areas<br>share the outline or agenda for the sessions, either orally or in writing<br>provide a bibliography of sources for further study | conduct premeeting survey<br>conduct assessment on the spot through large or small group brainstorming, anticipating certain needs in advance |
| Relates the topic directly (through examples) to the classroom | Is sensitive to the environment or dynamics within the group | Has a purpose in mind and adheres to the task at hand | Provides options in organization matters, especially if things go wrong |
| use role playing and simulation activities<br>prepare visuals and handouts<br>conduct demonstration teaching in classroom<br>videotape actual lesson | plan gripe sessions, but don't allow them to dominate the program<br>digress from prepared presentation to respond to a teachable moment<br>respond to body language | keep the session on schedule<br>continue informally for those who want to do so | know where to get more chairs or how to move to a larger room<br>suggest feasible alternatives for truly disgruntled participants – allow them to leave with dignity |

| | | |
|---|---|---|
| Provides materials or ideas for materials | Answers questions directly and patiently | Conveys explanations clearly |
| help teachers adapt a technique to fit their students' needs<br>conduct a series of materials-producing workshops | respect the audience, if you want the same in return | explain directions fully<br>avoid assuming too much |

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* Vacca, 1981.

tress by giving them advance notice of the transfer problem; helping them achieve high levels of skill proficiency during training; and designing the training program to help them develop an understanding of "how the model works, how it can be fitted into the instructional repertoire, and how it can be adapted to students" (1982, p. 6). Joyce and Showers (1982, p. 7) frequently quote a college football coach they interviewed to illuminate the parallels between the transfer of skills in teaching and in athletics. The coach tells his incoming first year players:

> There are going to be so many things in your head that your muscles just aren't going to respond like they should for awhile....You've got to understand that the best way to get through this is to relax, not worry about your mistakes, and come to each practice and each meeting anxious to learn. *We'll generally make you worse before we make you better.*

His words are also good advice for teachers who are learning new skills. Coaching can help teachers through the transition.

### *Effective Practices by Inservice Leaders*

The effectiveness of inservice leaders can affect how teachers feel about their staff development experiences. Vacca (1981) asked more than 150 classroom teachers to recall some of their inservice experiences. Her request was to list effective and ineffective behaviors of inservice leaders. She categorized the behaviors into four areas: content delivery, personal influence, professional competence, and structural arrangements. She then suggested appropriate strategies that inservice leaders might use as they practice the effective behaviors. Table 4 shows the four areas, the behaviors of effective inservice leaders, and the various implementation strategies suggested by Vacca. Do your experiences hold true with what Vacca found to be effective? Her results can be helpful to content area teachers who find themselves taking a leadership role in developing a content area reading program at their school.

## Summary

Many times, secondary school teachers are bewildered by the need to help their students understand printed text. Their lack of formal training in reading instruction necessitates their learning these skills after they become teachers. Involvement in a staff development program is one way they can acquire skills to help all their students learn from text. Research shows that systematic, long term staff development programs are infrequently found in schools. Effective staff development efforts occur in stages, with actual training sessions as only one part of a carefully planned and evaluated program of inservice. When training is followed by teams of teachers working together as coaches to study new skills and polish old ones, teachers are more likely to use the new skills in the classroom. Characteristics of inservice leaders themselves also affect the success of staff development efforts. Research has identified effective behaviors that can be used by content area teachers who find themselves taking a leadership role in a staff development program.

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